

**Request for Statement of Qualifications
for Professional Services**

FY 2014 & FY 2015 Stormwater Modeling, Mapping, & Analysis



City of Memphis, Tennessee

See Attached Q&A Document (9/16/13)

Qualifications to be received by September 26, 2013 at 2:00 p.m., CST

Submit Qualifications to:
City of Memphis
Attn: Brad Davis, PE
Division of Engineering
125 N. Main St., Room 644
Memphis, TN 38103



Prepared by City of Memphis
Division of Engineering
901.636.6700

**Request for Statements of Qualifications for
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City of Memphis, Tennessee

Request for Statement of Qualifications for Professional Services

FY 2014 & FY 2015 Stormwater Modeling, Mapping, & Analysis

I. Statement of Intent

The City of Memphis is issuing this Request for Statements of Qualifications (RFSOQ) to qualified firm(s) or team(s) to study the hydrologic and hydraulic characteristics of selected drainage basins and to develop a series of recommendations to improve drainage conditions throughout the study areas. The projects described herein represent the studies planned for the 2014 and 2015 fiscal year (FY 2014 & FY 2015), and represent several phases in a multi-year project to study, map, and improve the drainage infrastructure across the City of Memphis. The responses to this RFSOQ will be utilized for a 24-month period (FY 2014 and FY 2015) to select qualified consultants to participate in the drainage study efforts.

II. Planned Project Schedule

The following project schedule presents a timeline for the submission of the Statements of Qualifications (SOQ) from interested and qualified firms and the selection process by City staff. Project conditions or legislative constraints may cause portions of this schedule to change. However, it should be noted the deadline for the submission of the Statement of Qualifications cannot be changed except through a written addendum to this document published by the City of Memphis Division of Engineering.

| | |
|--|-------------------------------------|
| Request for Statements of Qualifications Issued | September 5, 2013 |
| Final Date to Submit <u>RFSOQ</u> Questions in Writing | September 12 2013 |
| Statement of Qualifications Due | September 26, 2013 |
| Evaluation of Responses and Interviews | September 26, 2013-October 17, 2013 |
| Final Selections / Begin Contract Development | October 17, 2013 |

III. Project Background

The City of Memphis was originally founded in 1819 on the Fourth Chickasaw Bluff along the Mississippi River. During its history, the City of Memphis has long been a hub for commerce and transportation of goods. During the late 1800's, several yellow fever epidemics decimated much of the City. Those epidemics, although ultimately costing Memphis its City Charter for 14 years, were the impetus behind city-wide infrastructure improvements in the early 20th Century including separate sanitary sewage collection and drainage systems. Since that time, Memphis has continued to grow in an eastward manner from the original riverside developments to its current boundaries.

Since the 1800's, several drainage criteria have been used to develop or improve infrastructure. Although well-intended, the drainage criteria implemented throughout many areas of the City were inadequate to properly characterize the stormwater runoff and flooding potential in Memphis. The result is numerous areas of the City with repetitive flooding problems affecting roadways and structures, particularly in older areas of the City. The drainage design standards have been continuously improved over the years, most recently in 2006, but the infrastructure has not been improved.

Acting on a recommendation from the City's Storm Water Advisory Board, the City of Memphis established a stormwater utility fee in 2006 to be assessed to households and businesses throughout the City. The intent of the fee is to provide a reliable funding source for the maintenance and improvement of the City's stormwater drainage infrastructure and streams. Maintenance activities are largely managed through the Division of Public Works, while drainage studies and capital improvement projects are managed through the Division of Engineering.

A 2012 review of the stormwater program identified 7 major study districts, largely corresponding to City Council Districts, which have been subdivided into numerous smaller study areas. The intent and goal of the Division of Engineering is to complete one drainage study in each of the study districts each year, starting in FY 2014. The smaller study areas will be systematically analyzed, at an anticipated rate of one per year per study area based on priority. Exhibit C1, found in Attachment C, illustrates the overall study areas. The eventual goal is to study each drainage basin in the City and undertake projects in each basin to mitigate the impacts of future storm events on the public infrastructure and private property.

IV. General Conditions

To the extent permitted by law, all materials included in the Statements of Qualifications shall be kept confidential until the qualifications evaluation is complete. No information about any qualifications or submitting entities shall be released until the process is complete, except to pertinent City staff and the Selection Committee. All information provided shall be considered by the Selection committee in making recommendations to pursue agreements with the selected submitted entities.

The City of Memphis has the right to (a) reject any and/or all submissions of qualifications; (b) waive irregularities and technicalities; (c) accept any alternative submission of qualifications which may, as determined by City staff, better serve the needs of the City of Memphis; (d) give full and proper evaluation of the firm or team presenting the qualifications. The City, and its appointed Selection Committee, shall be the sole judge of the qualifications, and the decision reached shall be final.

The City reserves the right to make any such investigation it deems necessary to determine the ability or qualifications of a submitting entity to perform the work requested. Information the City deems necessary to make this determination shall be provided, upon request, by the submitting entries. Such information may include, but is not limited to, current financial statement verified by an independent CPA, verification of availability of equipment and personnel, past performance records, and additional references.

All expenses related to preparing the Statement of Qualifications shall be borne by the submitting entities.

V. SOQ Submission Instructions and Requirements

All submitted Statements of Qualifications shall comply with the following instructions. These instructions are intended to ensure the prospective consultant firm(s) or team(s) are providing the City with the pertinent information in a relatively uniform format to assist the Evaluation Committee in making expedited and informed decisions.

A. General

Published RFSOQ information is available in PDF format on the City of Memphis website at <http://www.cityofmemphis.org/Government/EngineeringDivision.aspx>, where it can be viewed, downloaded, and/or printed. It is the responsibility of the interested parties to verify their responses are based on the most current version of the RFSOQ.

B. Questions

All inquiries, suggestions, or requests concerning interpretation, clarification, or additional information pertaining to the RFSOQ shall be made via e-mail to james.simpson@memphistn.gov no later than 5:00 PM on September 12, 2013. All questions should pertain to the RFSOQ submission and selection processes. *All questions pertaining to the scope of work or specific projects will not be addressed during this time.* No oral interpretations of the RFSOQ shall be used, nor shall the City of Memphis be responsible for any such interpretations. All clarifications or modifications to this document shall be issued as written addenda and be made available on the City's website. All addenda shall be considered a permanent part of the RFSOQ. No addenda shall be released within 48 hours of the SOQ submission deadline. It shall be the responsibility of each submitting entity to verify, through the City of Memphis Division of Engineering, they have all issued addenda and to incorporate the addenda into their SOQ's.

C. Submission Requirements

All submissions shall be received no later than September 26, 2013.

Electronic submission is preferred. SOQ's shall be sent via e-mail to engineering@memphistn.gov AND james.simpson@memphistn.gov. NOTE: The City of Memphis mailbox limit is 15MB per e-mail. It is recommended, and the responsibility of the submitting entity, to send a test e-mail with an attachment of similar size prior to the submission date. Any such e-mails and associated attachments will be deleted. If more than one e-mail is necessary, you must label each e-mail accordingly, "Part __ of __". Please note that only PDF and JPG documents will be accepted for electronic submissions.

If you choose to not submit electronically, you must submit six (6) copies of the SOQ to:

City of Memphis
Attn: Brad Davis, PE
Division of Engineering
125 N. Main St., Room 644
Memphis, TN 38103

Printed submissions shall be enclosed in a sealed envelope and shall have the name of the submitting entity and "Statement of Qualification for Professional Services for FY 2014 & FY 2015 Stormwater Modeling, Mapping, & Analysis" plainly marked on the outside.

Responses shall clearly indicate the legal name, address, and telephone number of the submitting entity (company, firm, partnership, individual). The qualifications shall bear an original signature, being signed above the typed or printed name and title of the signer. All qualifications must be signed by a duly authorized office of the company with the authority to bind the firm to a contract.

SOQ's will not be returned. SOQ's not conforming to the required format shall be rejected. SOQ's received after the specified time shall not be considered. It is the sole responsibility of the submitting entity to ensure the SOQ has been submitted before the deadline stated above. Late submissions arising from the use of a separate courier or delivery service shall not be accepted and will not be considered. Any such late submissions will remain unopened.

D. Format

Qualifications must be typed or printed on 8-1/2" x 11" paper. Pages must be consecutively numbered. A table of contents must be included in the statement of qualifications. The maximum permissible length of the submission, excluding the cover sheet and the table of contents, is 30 pages.

The statement of qualifications should be structured as follows:

1. Cover Sheet
2. Letter from submitting entity to selection committee. (included in total page count)
3. Table of Contents
4. Firm Profile including pertinent information and a general overview of the submitting entity. If submission includes multiple firms, each firm should be represented in this section. M/WBE firms should be clearly identified, along with the anticipated percentage of work they will be responsible for.
5. Organizational Chart and Resumes for key employees who will manage the project and final product.
6. Summary of Relevant Experience for selected projects the submitting entity believes will demonstrate applicable experience(s) and aid the selection committee in evaluating the entity.

7. Project Approach, including any novel approaches and experiences that may help distinguish the submitting entity in the selection process.
8. References from previous clients for whom similar work was performed.

VI. SOQ Evaluation Procedure and Criteria

All qualified submissions received before the deadline shall be evaluated and scored by the Evaluation Committee according to the criteria contained herein. Deviations from the requested SOQ format may result in scoring deductions or outright ineligibility for evaluation.

The criteria to be used by the Evaluation Committee are listed below, and are based on a 100-point scale:

1. The expertise of the submitting entity with projects of this general nature and scope, to be evaluated as follows (60 points total):
 - a. Experience of firm(s) with projects of similar scope and nature **(25 points)**, and
 - b. Experience of submitted staff with projects of similar scope and nature **(25 points)**, and
 - c. Experience with City of Memphis projects. **(10 points)**
2. M/WBE participation on the project team will be evaluated as follows (17 points total). To qualify for M/WBE participation, a firm must be included on the City's list of certified M/WBE firms. A list of the City's eligible M/WBE firms shall be provided upon request to the City Contract Compliance Office.
 - a. M/WBE firm(s) is included in the project team in the statement of qualifications, including a defined role and projected percentage of professional fees **(8 points)**, and
 - b. M/WBE participation, above 10% of the total professional fees, will receive additional points on a prorated basis where 10% is the minimum and the highest possible points will be based on the highest percentage of M/WBE participation submitted. **(9 points)**
3. Local availability of staff / team members. **(13 points)**
4. Demonstrated ability to conduct public meetings and effectively communicate technical information to the general public and public officials. **(10 points)**

Submitting entities shall be available for interviews by the Evaluation Committee following the initial scoring. Discussions may be conducted with responsible submitting entities for the purposes of clarification to assure full understanding of and conformance to the RFSOQ requirements. After qualifications have been opened, any selected entity should be prepared to meet with the Evaluation Committee at a time and date determined by the City of Memphis. Selection shall be based on the firms' qualifications applicable to the scope and nature of the services to be performed per this RFSOQ. Determination of firms' qualifications shall be based on their written responses to the RFSOQ and information presented to the Evaluation Committee during oral interviews, if any.

In addition to materials provided in the written responses to this RFSOQ, the Committee may request additional material, information, or references from the submitting entity.

The firm(s) or team(s) determined to be the most qualified for the projects, based on the Statements of Qualifications and oral interviews, will be selected to begin contract negotiations to provide engineering services on one, or more, of the planned drainage studies. The firm(s) or team(s) selected will be notified at the earliest practical date and invited to submit more comprehensive information, if necessary.

In the event a satisfactory agreement cannot be reached with a selected entity, the City may choose to negotiate with other qualified firm(s) or team(s).

Attachment A: Standard Survey Codes

The survey data and associated CAD file provided to the City of Memphis as part of these projects shall conform to the following survey codes. The decision is left to the selected entity to decide whether to utilize these codes during field survey work or to “find and replace” codes using a computer and the survey log file. However, if different codes are used during the field work, a list of original and modified survey codes shall be provided in addition to the other requirements.

| ID | CODE | DESCRIPTION |
|----|----------|---|
| 1 | INL3X3 | 3x3 Inlet (Shoot 4 Corners on Top) |
| 2 | INL4X4 | 4x4 Inlet (Shoot 4 Corners on Top) |
| 3 | 6-72L | 6-72 inlet Left Corner @ Face of Curb |
| 4 | 6-72R | 6-72 inlet Right Corner @ Face of Curb |
| 5 | ANGPT | Angle Point |
| 6 | ABUT | Bridge Abutment |
| 7 | ACPAD | Air Conditioner (Shoot 4 Corners) |
| 8 | AHEADW | Word, Ahead (Shoot 4 Corners) Word written on Asphalt |
| 9 | APPSLAB | Bridge Approach Slab |
| 10 | ARROWL | Left Turn Arrow (3 Shots, 2 at the bottom, 1 at the point) |
| 11 | ARROWR | Right Turn Arrow |
| 12 | ARROWS | Straight Ahead Arrow |
| 13 | ASP | Asphalt Surface |
| 14 | ASPCURB | Top of Asphalt Curb |
| 15 | AWNING | Awning |
| 16 | AXLEFND | Axle Fnd |
| 17 | BC | Back of Curb |
| 18 | BSW | Back of Sidewalk |
| 19 | BSWMP | Back Walk @ Mid Point |
| 20 | BARR | Barricade |
| 21 | BBGOAL | Basketball Goal |
| 22 | BBP(*) | Billboard Pier (#= Pole Diameter in Feet) |
| 23 | BENCH(*) | Bench (*= Wood, Metal, etc) |
| 24 | BIRDHSE | Bird House |

| ID | CODE | DESCRIPTION |
|-----------|-------------|--|
| 25 | BL | Base Line |
| 26 | BLDGCOR | Building Corner |
| 27 | BLDGFACE | Building Face |
| 28 | BM | Bench Mark |
| 29 | BOTTOM | Creek or River Bottom |
| 30 | BOXELEC | Electrical, not defined by code list |
| 31 | BOXTS | Traffic Signal, mounted flush in s/w with cover (Shoot 4 Corners) |
| 32 | BOXMLGW | Traffic Signal, mounted flush in s/w with MLGW cover (Shoot 4 Corners) |
| 33 | BRIDGEEND | Bridge End |
| 34 | BRIDGERAIL | Bridge Railing |
| 35 | BFFE | Basement Finish Floor Elevation |
| 36 | BUSSHELT | Bus Shelter |
| 37 | BUSH | Bush |
| 38 | CARM | Control Arm (access to parking lot) |
| 39 | CFT(*) | Crow Foot (*= FND or SET) |
| 40 | CARPORT | Carport |
| 41 | CONCSLAB | Concrete Slab |
| 42 | CONCSPILL | Concrete Spillway |
| 43 | CPS(*) | Cotton Picker Spindle (*= FND or SET) |
| 44 | CSPLIT | Curb Split |
| 45 | CONCSWALE | Concrete Swale |
| 46 | CTVPED | Cable TV Pedestal |
| 47 | CCL(*) | Concrete Channel Lining (*= TOP, TOE, FL, etc.) |
| 48 | CHIMNEY | Chimney (describe material in a note) |
| 49 | CL | Center Line |
| 50 | CLPOST | Clothes Line Post |
| 51 | CLSTRC | Centerline of Structure |
| 52 | COLUM(*) | Column (*= Wood, Brick, CONCRete etc.) |

| ID | CODE | DESCRIPTION |
|-----------|-------------|--|
| 53 | CONCCOR | Concrete Corner |
| 54 | CONCENC | Concrete Encasement |
| 55 | COPWALL | Coping Wall |
| 56 | CUL(*) | Culvert (*= TOP,TOE, INVert, FL, etc.) |
| 57 | DBYL | Double Broken Yellow Line |
| 58 | DMH | Drain Man Hole |
| 59 | (*)DOCK | (* = Loading, Boat, Etc.) Dock |
| 60 | DOGHSE | Dog House |
| 61 | DOGRUN | Dog Run |
| 62 | DSBYL | Double Solid & Broken Yellow Line |
| 63 | DSYL | Double Solid Yellow Line |
| 64 | DW(*) | Driveway (*= ASPhalt, CONCrete, GRVL) |
| 65 | DWLB | Driveway apron (left back corner, facing street) |
| 66 | DWLF | Driveway apron (left front corner, facing street) |
| 67 | DWRB | Driveway apron (right back corner, facing street) |
| 68 | DWRF | Driveway apron (right front corner, facing street) |
| 69 | ELECLINE | Electric Line |
| 70 | ELECVALUT | Electric Vault |
| 71 | EM | Electrical Meter |
| 72 | EMH | Electrical Man Hole |
| 73 | E(*) | Edge of (*= Pavement, Water, GRVL, Brick) |
| 74 | ER | End Radius |
| 75 | FH | Fire Hydrant |
| 76 | FPUMP | Fuel Pump, at Service Stations |
| 77 | FSW | Front of Side Walk |
| 78 | FB | Flower Bed |
| 79 | FC | Face of Curb |
| 80 | FCAPT | Face Curb Angle Pt |

| ID | CODE | DESCRIPTION |
|-----------|-------------|---|
| 81 | FCER | Face of Curb @ End Radius |
| 82 | FFE | Finished Floor Elevation |
| 83 | FIRECB | Fire Call Box |
| 84 | FLDI | Flow Line Ditch |
| 85 | FLGUT | Flow Line Gutter |
| 86 | FLP(*) | Flowline Pipe (*= Pipe Dia. in Inches) |
| 87 | FLAGP | Flag Pole |
| 88 | FNC(*) | Fence (*= Height in Feet) |
| 89 | FNCCOR | Fence Corner |
| 90 | FNCEND | Fence Terminates |
| 91 | FOC | Fiber Optic Cable |
| 92 | FOLL | Following |
| 93 | FTBRIDGE | Foot Bridge |
| 94 | GLINE | Gas Line |
| 95 | GM | Gas Meter |
| 96 | GRAIL | Guard Rail |
| 97 | GARAGE | Garage |
| 98 | GARDEN | Garden |
| 99 | GATE(*) | Fence Gate (*= Metal, Wood, etc.) |
| 100 | GMH | Gas Manhole |
| 101 | GND | Ground |
| 102 | GRATE | Grate That Does Not Have Abbreviation (Give Corner Shots) |
| 103 | GRDSTK | Guard Stake |
| 104 | GRVL | Gravel |
| 105 | GUYP | Guy Pole |
| 106 | GUYW | Guy Wire |
| 107 | GV | Gas Valve |
| 108 | HWL | Head Wall (Left End Face) |

| ID | CODE | DESCRIPTION |
|-----------|-------------|--|
| 109 | HWR | Head Wall (Right End Face) |
| 110 | HROW | Hedgerow (Shoot at Face or Corners) |
| 111 | HSTONE | Headstone (Grave) |
| 112 | HUB (*) | Point Location (*= FND or SET) |
| 113 | INL10 | No. 10 Inlet (Shoot 4 Corners) |
| 114 | INL11 | No. 11 Inlet (Shoot 4 Corners) |
| 115 | INL12 | No. 12 Inlet (Shoot 4 Corners) |
| 116 | IP(*) | Iron Pin (*= FND or SET) |
| 117 | JCTBOX | Junction Box |
| 118 | LIFTSTA | Lift Station |
| 119 | LIP(*) | Man Hole Lip (*= Sewer, Drain, Electrical, Etc.) |
| 120 | LP(*) | Light Pole (*= Metal, Wood, etc.) |
| 121 | LS | Last Shot |
| 122 | MCOVER | Metal Cover for unknown utilities |
| 123 | MAILBOX | Mailbox |
| 124 | MED | Median |
| 125 | METP(*) | Metal Pole (*= Pole Diameter in Inches) |
| 126 | MHCOR | Mobile Home Corner |
| 127 | MON(*) | Monument (*= FND OR SET) |
| 128 | NAIL | Nail (other than P-K) |
| 129 | NS | Next Shot |
| 130 | ONLYW | Word, Only (Shoot 4 Corners) Word written on Asphalt |
| 131 | PROPSMH | Proposed Sewer Man Hole |
| 132 | PARWALL | Parapet Wall |
| 133 | CTVPB | Pull Box - Cable TV |
| 134 | ELECPB | Pull Box - Electrical |
| 135 | TSPB | Pull Box - Traffic Signal |
| 136 | PC | Point of Curvature |

| ID | CODE | DESCRIPTION |
|-----------|-------------|--|
| 137 | PCC | Point of Compound Curvature |
| 138 | PEDBUT | Pedestrian Push Button Control |
| 139 | PEDLGT | Pedestrian Head Signal (Walk, Don't Walk) |
| 140 | PHONEB | Phone Booth (Shoot 4 Corners) |
| 141 | PHONEP | Phone, Pay (Shoot on O/S) |
| 142 | PI | Point of Intersection |
| 143 | PIER(*) | Pier (*= Diameter in Ft.) |
| 144 | PILE | Piling |
| 145 | PILECAP | Pile Cap |
| 146 | PK(*) | PK Nail (*=FND or SET) |
| 147 | PLAYEQP | Playground Equipment |
| 148 | PM | Parking Meter |
| 149 | PMT | Pad Mounted Transformer (Shoot 4 Corners) |
| 150 | POC | Point on Curve |
| 151 | POOLHSE | Pool House |
| 152 | PORCH(*) | Porch (*= Wood, Brick, CONCrete etc.) |
| 153 | POT | Point on Tangent |
| 154 | PP(*) | Power Pole (*= CONCrete, Wood, Metal, Diameter in inches) |
| 155 | PRC | Point of Reverse Curvature |
| 156 | PSL | Parking Stall Line |
| 157 | PT | Point of Tangency |
| 158 | PROTANK | Propane Tank (Shoot 4 Corners) |
| 159 | PUMP | Pump |
| 160 | RETWALL | Retaining Wall |
| 161 | RIPRAP | Rip Rap / Revetment |
| 162 | ROW | Right of Way |
| 163 | RRCL | Center Line of RR Tracks |
| 164 | RRMM | RR Mile Marker |

| ID | CODE | DESCRIPTION |
|-----------|-------------|--|
| 165 | RRTRK | Rail Road Track |
| 166 | RRSPIKE | Rail Road Spike |
| 167 | RRTRW | Rail Road Tie Retaining Wall |
| 168 | RWM | Rectangular Water Meter (Shoot 4 Corners) |
| 169 | INLS11 | S-11 Inlet (With Side Openings Shoot 4 Corners) |
| 170 | SBWL | Single Broken White Line |
| 171 | SCDRAIN | Scupper Drain (On Bridges) |
| 172 | SCO | Sewer Clean Out |
| 173 | SDWL | Single Dotted White Line |
| 174 | SHRUB | Shrub |
| 175 | SLIDE(*) | Slide (*= Wood, Metal, etc) |
| 176 | SMH | Sewer Man Hole |
| 177 | SPOILBK | Spoil Bank |
| 178 | SPRINK | Sprinkler Head |
| 179 | SSPILE | Steel Sheet Piling |
| 180 | SSWL | Single Solid White Line |
| 181 | SSYL | Single Solid Yellow Line |
| 182 | STSIGN | Street Sign |
| 183 | STANCH | Stanchion |
| 184 | STEP | Step (Shoot 2 Front Corners on Top of Step) |
| 185 | STOPBAR | Traffic Stop Bar |
| 186 | STOPW | Word, Stop (Shoot 4 Corners) Word written on Asphalt |
| 187 | STOSHED | Storage Shed |
| 188 | SWDRAIN | Sidewalk Drain (Shoot 4 Corners) |
| 189 | SWIMPOOL | Swimming Pool |
| 190 | SWNGSET | Swingset |
| 191 | SWRLINE | Sewer Line |
| 192 | TP(*) | Telephone Pole(* = Wood, Metal, ETC..) |

| ID | CODE | DESCRIPTION |
|-----------|-------------|---|
| 193 | TPED | Telephone Pedestal |
| 194 | TTB | Telephone Terminal Box |
| 195 | TLINE | Telephone Line |
| 196 | TB | Top of Bank |
| 197 | TBM | Temporary Bench Mark |
| 198 | TC(*) | Top of Curb (*= ER, MP, END Etc.) |
| 199 | TCSIGN | Traffic Control Sign |
| 200 | THRT | Throat of Inlet |
| 201 | TMH | Telephone Man Hole |
| 202 | TOEGUT | Toe of Gutter (Shot on Concrete) |
| 203 | TOE | Toe of Slope / Toe of Fill |
| 204 | TREE(*) | Tree (*= Diameter in Inches) |
| 205 | TREED(*) | Double, 2 trees from common root (* =Dia. In Inches) |
| 206 | TREEL | Tree Line |
| 207 | TREEQ(*) | Quad, 4 trees from common root (* =Dia. In Inches) |
| 208 | TREET(*) | Triple, 3 trees from common root (* = Dia. In Inches) |
| 209 | TS | Traffic Signal Light |
| 210 | TSAW | Traffic Signal Anchor Wire (Shoot Where Attached to Pole) |
| 211 | TSCAB | Traffic Signal Control Cabinet |
| 212 | TSL | Traffic Signal Loop (Cut in Asphalt) |
| 213 | TSP(*) | Traffic Signal Pole (*= Metal, Wood) |
| 214 | TVAP(*) | TVA Post, Metal (* = Dia.In Ft.) |
| 215 | TVATWR | TVA Tower (Enter # in note) |
| 216 | VAULT | VAULT |
| 217 | VENTP(*) | Vent Pipe over underground pipes (*= Sewer, etc) |
| 218 | WSPIG | Water Spigot |
| 219 | WALL(*) | Wall (*= Brick, CONCrete., Wood, etc.) |
| 220 | WCR | Wheel Chair Ramp (Shoot 4 Corners) |

| ID | CODE | DESCRIPTION |
|-----------|-------------|-----------------------|
| 221 | TESTWELL | Test Well |
| 222 | WLINE | Water Line |
| 223 | WM | Water Meter |
| 224 | WV | Water Valve |
| 225 | WW | Wing Wall |
| 226 | XWALK | Pedestrian Crosswalk |
| 227 | XCUT(*) | X-CUT (*= FND or SET) |

Attachment B: File Structure for Final Submission

The following folder structure and naming convention shall be used to organize all files to be included in the final deliverables to the City. All files within the folders should be well-organized and include, at a minimum, the City Project Number. Please refer to Attachment D: Minimum Project Requirements and Sample Project Scope for further details on deliverables.

→[Basin ID]-[Basin Name]-[FY]-[City Contract No.]

→Final Report

→Complete Report (PDF format with all Exhibits)

→Exhibits (individual PDF files for each exhibit)

→Tables (MS Excel files containing tabular data)

→GIS Mapping (all GIS to be ESRI-compatible formats)

→Base Files (original files provided by the City to consultant)

→Flooded Area Maps (model results illustrated as floodplains)

→Updated Base Files (survey-adjusted GIS data sets)

→Georeferenced Photos

→Modeling

→Base Model

→Final Recommendation

→Alternatives (note: all alternatives can be stored in one model file, or in sub folders that are appropriately labeled)

→Survey

→ASCII Files (PNEZID Format)

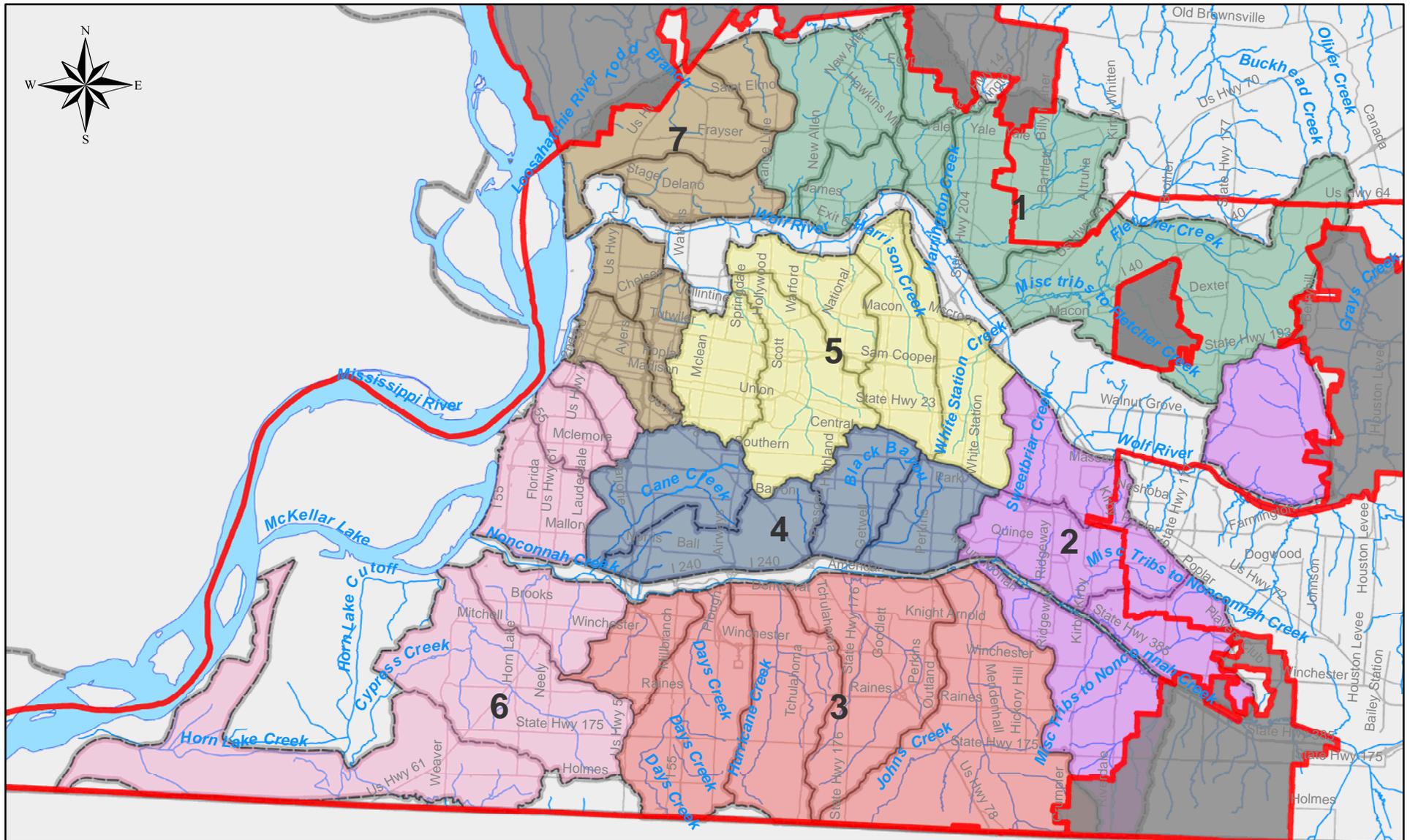
→CAD Files (AutoCAD 2013, following National CAD Standard)

→PDF Scans of field books

→Photography

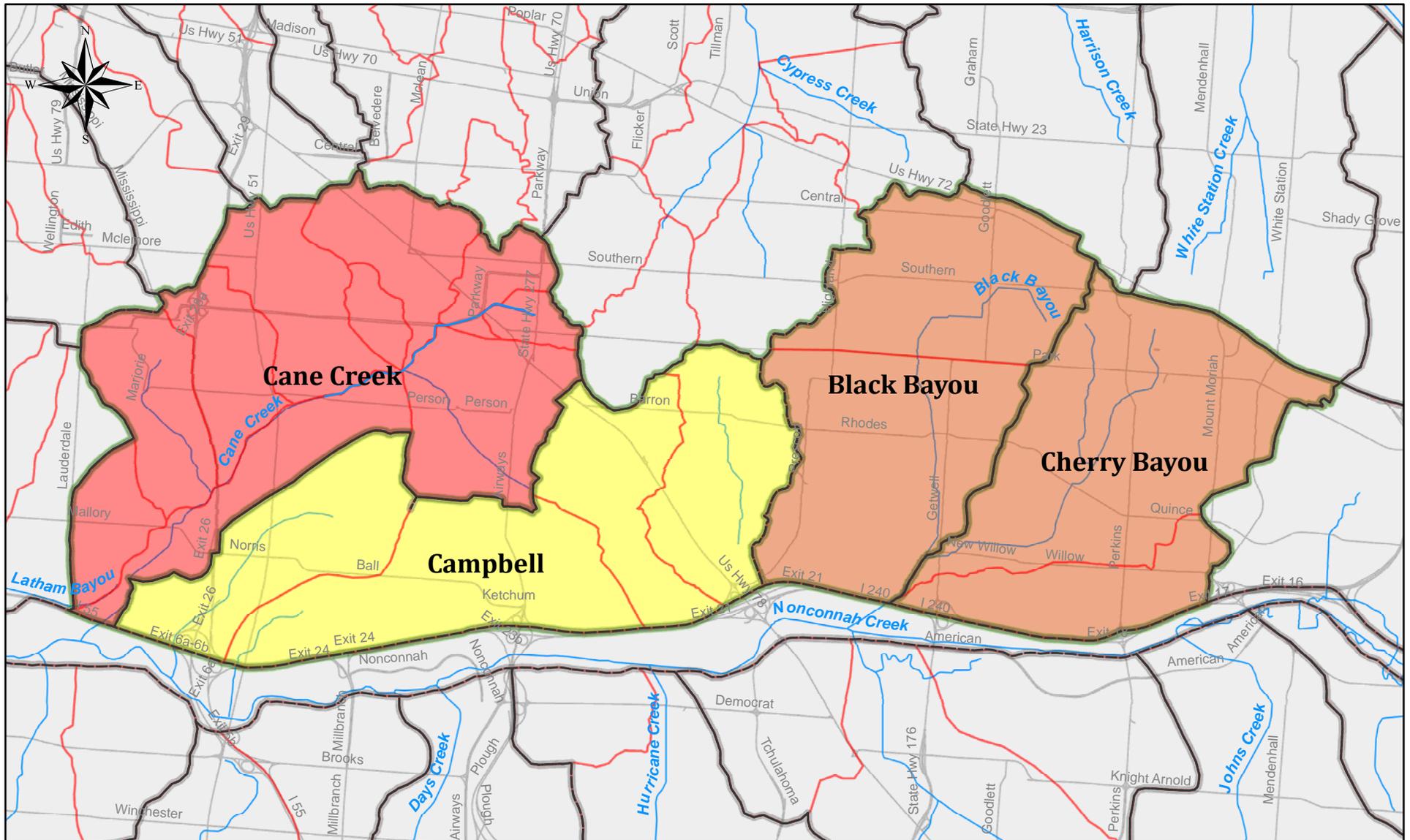
Attachment C: Study Area Maps and Information

The following exhibits illustrate how the City has been organized for this master planning effort. Exhibit C1 illustrates the entire City, and its subdivision into the seven Study Districts. Exhibit C2 illustrates Study District 4 and the various Study Areas that comprise that particular Study District. Exhibit C3 illustrates the Cane Creek Study Area, located in Study District 4.



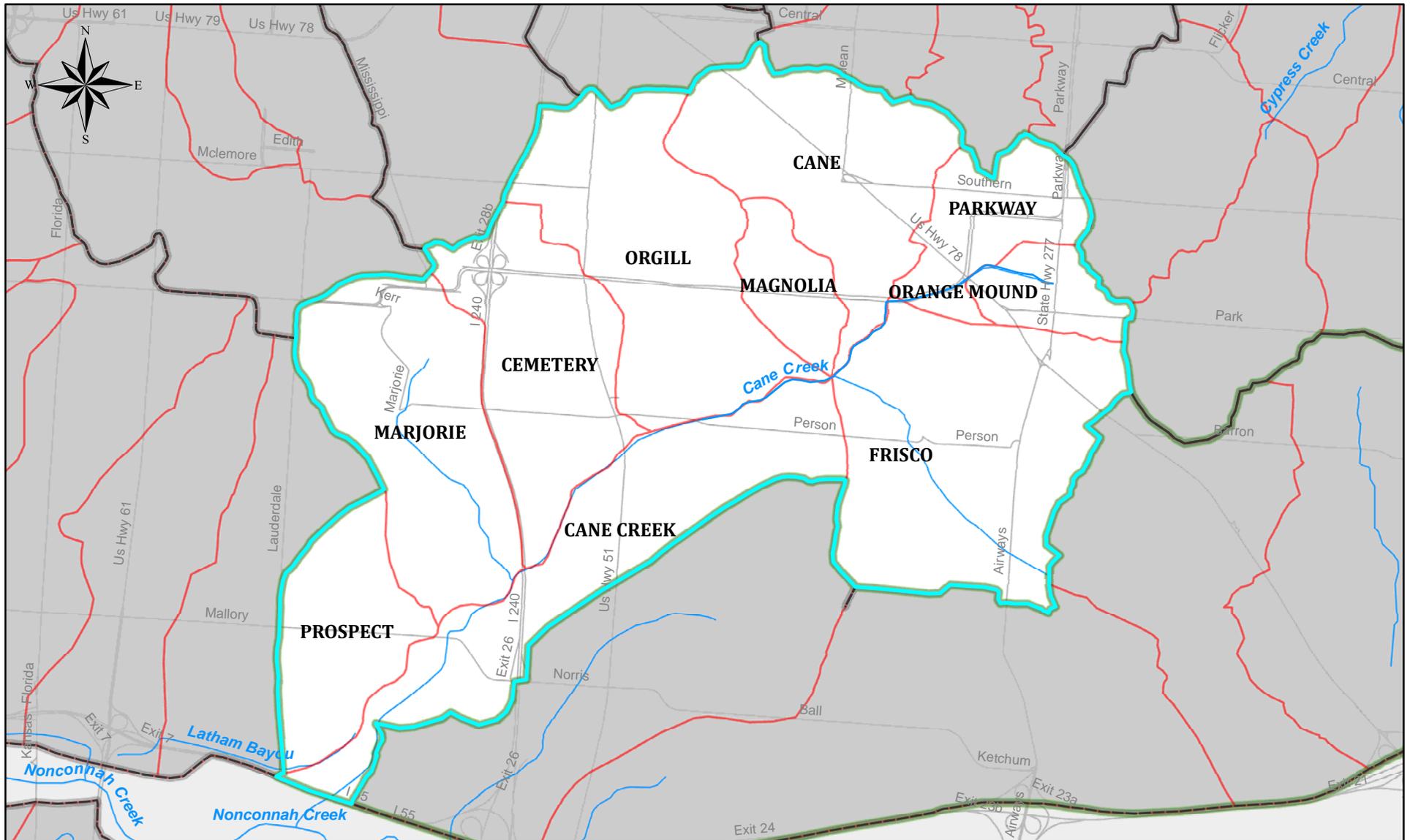
FY 2014 Stormwater Modeling, Mapping, & Analysis C1: Overall Study District Map





FY 2014 Stormwater Modeling, Mapping, & Analysis C2: Study District 4, Basin Prioritization





FY 2014 Stormwater Modeling, Mapping, & Analysis C3: Cane Creek Study Area



Attachment D: Minimum Project Requirements and Sample Project Scope

The following scope presents a generalized version of what is expected to be included in the project scope of any signed contracts resulting from the RFSOQ. It, however, may not include all potential scope items or cover every topic. Therefore, each entity selected to perform a project related to this RFSOQ will be responsible for making a “good faith” effort towards developing a practical scope of work tailored to their specific study and approved by City staff. The term “consultant” as used below, is intended to imply an individual company, or group of companies working together to complete the scope of services for each project resulting from this RFSOQ and selection process. The term “project team” as used below, is intended to imply the collective group containing the consultant and pertinent City staff.

A. Project Kick-Off

- The consultant shall attend a project kick-off meeting with City staff to discuss the project schedule, administrative issues, and known issues throughout the Study Area(s).
- The consultant shall provide the City with a list of contacts responsible for the project effort. The list of contacts shall indicate a primary and secondary point of contact.
- The consultant shall attend an initial public meeting intended to allow residents an opportunity to discuss observed problem areas with the project team.
- The consultant shall conduct field visits of the subject drainage system prior to land surveying efforts to develop a better understanding of the existing conditions throughout the system and site features to include in the surveying effort.
- The consultant shall present and maintain an anticipated project schedule. This schedule is to be updated and presented to the City staff on a regular basis.

B. Data Collection and Survey

- Available data (GIS, record drawings, etc.) shall be made available from the City. The consultant shall be responsible for reviewing the available data.
- GIS-based topographic information shall be allowed as the main source of topographic information beyond the top of banks. All channel and pipe sections shall be surveyed, including discrete points to define the top and invert elevations of each drainage structure (inlet, headwall, manhole, etc.). All channel sections shall be surveyed from top of bank to top of bank, at a minimum.
- The land surveying efforts shall meet or exceed the requirements defined below:
 - The horizontal datum for survey work shall be NAD83, TN Zone 4100, as derived from the NGS National Spatial Reference System (NSRS). Horizontal survey data collection shall comply with “SECOND ORDER” standard, as defined in Table A-4 of the current TDOT Survey Manual.
 - The vertical datum for all survey work shall be based on the City of Memphis Benchmark Network. All control points shall have vertical control established by differential leveling to the City’s Benchmark Network, without exception. Vertical survey data collection shall comply with “THIRD ORDER” standard, as defined in table A-5 of the current TDOT Survey Manual.

- The distance between channel cross sections will be variable, depending on channel geography and transitions. However, the maximum allowable cross-section spacing along prismatic sections is 500 feet.
- Surveyed cross-sections shall be required at each significant change in channel geometry, at all points of concentrated stormwater discharge, and immediately up- and downstream of structure crossings.
- All field survey work shall utilize the field survey codes included in Attachment A. In the event the provided list does not cover all the necessary survey codes, a list of additional codes used, and their accompanying descriptions, shall be provided to the City.
- All survey data collected for structures shall be consistent with standards to be provided by the City.
- The following features shall be included in the land surveying effort, at a minimum:
 - All open channels;
 - All pipes 24" and larger in the tributary drainage network;
 - All pipes downstream from an identified flooding concern;
 - All structures (headwalls, bridges, inlets, etc.) along drainage features meeting the above criteria.
- All surveyed structures shall be photographed. All such photographs shall be georeferenced. Structures crossing an open channel shall have photographs from the upstream and downstream vantage points. Structures discharging into channel shall be photographed from the channel. Photographs shall be provided as a GIS layer.
- The consultant shall coordinate the survey data with existing information, including plans and GIS data, to develop a more accurate depiction of the drainage basin and network to be studied.
- Each individual project scope will include a specific number of structures and cross-sections to be included in the base contract. Any additional survey collection efforts will be handled as additional work, subject to the consent of the Division of Engineering.

C. Hydrologic and Hydraulic Modeling

- All hydrologic and hydraulic modeling shall be consistent with Volume 2 of the City of Memphis / Shelby County Stormwater Management Manual. Modeling shall be based on the 24-hour, SCS Type II storm with statistical recurrence intervals of 2, 5, 10, 25, 50, and 100 years.
- The hydrologic and hydraulic model(s) shall be validated, to the extent practicable, based on available information and/or observations.
- All hydrologic and hydraulic modeling efforts shall be completed in the InfoSWMM modeling software package using sound engineering judgment and modeling practices.
 - One license for the modeling software shall be made available from the City of Memphis for the duration of the contract time. The consultant is responsible for any materials issued with the modeling software and will bear the cost of and replacement materials. Software licenses are to be used on City of Memphis-related projects only. In the event the consultant does not finish within the contract time, the software license may be requested at the discretion of the City. In this event, the

- consultant will be responsible for obtaining their own license of the software, at no additional cost to the City.
- The City will pay for and provide one (1) training session for up to two people from the consultant team, to be held at a location of the City's choosing in conjunction with other consultants working on similar projects.
 - All files shall be maintained and named according to the structure outlined in Appendix B.
 - Other necessary software packages for the completion of the project shall be the responsibility of the consultant.
 - The consultant shall be solely responsible for providing the necessary computer hardware to operate all software (modeling, GIS, CAD) required to comply with the conditions contained herein. Specifically, the InfoSWMM modeling platform requires a license of ArcGIS to fully function. The consultant will be responsible for the provision of any GIS software.
- The projects shall be modeled using a combination 1D/1D hydrologic and hydraulic model; which relies on traditional 1D model mechanics to characterize flow throughout the underground drainage network, channels, and overland flow areas.
 - The preliminary modeling results and recommended improvements shall be presented to selected City staff for input prior to fully analyzing potential improvements.
 - Based on input from City staff, the consultant shall study the impacts of potential capital improvement projects on the modeled flooded areas. The consultant will develop a final recommendation for capital improvement projects to pursue in subsequent years. Recommendations shall include cost estimates and a Benefit Cost Analysis compliant with FEMA requirements.

D. Final Report

Refer to Attachment E for a sample outline. The final report shall include the following:

- An Executive Summary, no more than 5 pages in length, highlighting the modeling effort, recommended improvements, and estimated costs;
- Background information for the project and a synopsis of known issues;
- Results from the existing conditions analyses;
- Results from the alternatives analyses;
- Planning-level cost analysis for each of the recommended improvements;
- A FEMA-compliant Benefit-Cost Analysis;
- Color exhibits (1:200 scale, max) illustrating the modeled flooding extent for the existing and improved conditions; and
- Incorporation of pertinent City comments.

E. Model Transfer Services

The Consultant is expected to transfer ownership and operation of the project models to the City staff prior to completion of the project. This service shall include, at a minimum, the following:

- Provision of competed models on write-protected digital media for installation on the City servers. The folder/file naming convention and organizational structure shall be as shown in Attachment B; and
- A presentation to selected City staff to review the completed model, including all non-standard aspects.
- The consultant's lead modeling engineer shall attend two separate 4-hour sessions at City Hall to ensure the model is running correctly on City computers and the results are consistent with those presented in the Final Report.

F. Anticipated Meetings

The following meetings are to be included in the project schedule and proposed fees. Unless noted otherwise, the meetings indicated are single instances. Additional meetings requested by, and for the benefit of the consultant team will be at the expense of the consultant team.

- Project kick-off meeting;
- Initial public meetings (up to 2) to hear resident concerns;
- Monthly progress meetings (to be regularly scheduled);
- 50% project review meeting;
- Review of preliminary solutions;
- Review of final solutions;
- 95% project review meeting;
- Presentation to senior City staff;
- Final public meetings to present results (up to 2); and
- Unplanned, unscheduled meetings at the request of the City (up to 3)

G. Deliverables and Expected Schedules

The final items, as a minimum, will be submitted to the City upon completion of the final report.

- Four (4) printed, full-color copies of the Final Report;
- A portable, USB-compatible external hard drive containing the following:
 - Modeling files, including base conditions and all modeled alternatives;
 - Final Report
 - Entire document in single PDF format and
 - Individual exhibits in PDF format,
 - GIS Feature Classes
 - Georeferenced photos of the following:
 - All major structures,
 - Open/Closed system transitions,
 - Stream crossings,
 - Point discharges to modeled streams, and
 - Other features that could impact modeling efforts and results,
 - Hydrologic basins for modeling,
 - Land use polygons for modeling,
 - Soil type polygons for modeling,

- Construction of model, including:
 - Channel centerlines (line),
 - Pipe networks (line),
 - Nodes (inlets, manholes, etc.), and
 - Defined overland flow paths (line),
- Inundation coverage for modeled alternatives,
- Sketches of recommended solutions,
- Surveyed structures (FFEs), with indications of whether they are in or out of the floodplain, and
- Updated topography.
- Survey data
 - Field survey, in AutoCAD 2013 format including modeling triangulated irregular network (TIN);
 - Field survey data, in a comma-separated file (PNEZID);
 - Scans of survey field books in PDF format

Attachment E: Sample Report Outline

The following sample report outline is a general approach intended to standardize the final reports received by the City in an effort to maximize the usability of the final products throughout the applicable City operational divisions. Each final report shall be tailored to the individual study, although it is expected that any major deviations from the report outline, defined below, be approved prior to the submission of the final report.

i. Executive Summary

The executive summary is intended to summarize the project in a short and meaningful way for senior City staff and leadership. It should be limited to 5 pages and include a description of the problems, study efforts, recommendations, and associated costs.

ii. Table of Contents

iii. List of Tables

(refer to following pages for examples)

iv. List of Exhibits (refer to following pages for examples)

1. Project Introduction and Background

This section is intended to provide an overview of the project area; which would include known problem areas and an exhibit of the study area illustrating the drainage basin and known issues overlaid on aerial photography.

2. Review of Previous Studies and Available Data

This section is intended to include a review of any applicable studies, if any, and other pertinent data available from the City or other reliable sources.

3. Results and Details for Major Sub-Basins

This section is intended for the discussion of specific modeling exercises, analysis of existing conditions, development and testing of improvement alternatives, and cost estimating. If the overall study area includes smaller, sub-basins that warrant individual discussion, each sub-basin should be included in its own section. This section shall contain a listing of all assumptions and parameters used by the modeling team to develop the models and a rationale for the decisions made.

a. Review of Hydrologic and Hydraulic Modeling Approach

This section is intended to include an overview of the overall modeling approach and process used, as well as details of the model validation efforts.

b. Existing Conditions Analysis and Review

This section should include a review of the modeling results for the existing conditions; including details of flooding areas, elevations,

features which could aggravate flooding conditions, and applicable exhibits and profiles to illustrate the modeling results.

c. **Development and Modeling of Potential Solutions**

This section should include a review of the modeling results for the various alternatives analyzed; including details of flooding areas, elevations, features which could aggravate flooding conditions, and applicable exhibits and profiles to illustrate the modeling results.

d. **Cost Estimates**

This section should include a cost estimate for the construction of each recommended improvement. Cost analyses should include the cost to purchase land to construct any improvements.

4. Final Recommendations

This section should contain an overall summary of all of the recommended improvements, sequence of proposed improvements, estimated construction costs, and a benefit-cost analysis for the recommended course of action in the basin.

5. Benefit-Cost Analysis

This section shall include a Benefit-Cost Analysis consistent with FEMA standards for each individual project that comprises the final recommendation and the entirety of the final recommendation. Refer to FEMA's website (<http://www.fema.gov/benefit-cost-analysis>) for additional details, methodology, and software tools.

6. Standard Exhibits

1. Summary Tables for Scenario Results
2. Overall Study Area Map (11" x 17", Scale Unrestricted)
3. Sub-Basin Delineation Map (11" x 17", Scale Unrestricted)
4. Existing Conditions Plan and Floodplain (11" x 17", 1" = 200' MAX Scale)
5. Improved Conditions Plan and Floodplain (11" x 17", 1" = 200' MAX Scale)
6. Example Model Cross Section Exhibits

Table E.1
Example Scenario Results for _____ Basin

| Node / Cross-Section ID | Critical WSEL (ft) | Storm Recurrence Interval (yr) | Modeled Water Surface Elevations (ft) | | | | | | Final Recommendation |
|-------------------------|--------------------|--------------------------------|---------------------------------------|---------------|----------------|-----------------|----------------|---------------|----------------------|
| | | | Existing Conditions | Alternative I | Alternative II | Alternative III | Alternative IV | Alternative V | |
| L-155+41 | 251.76 | 100 | 251.91 | 251.37 | 251.85 | 252.11 | 251.85 | 251.77 | 251.51 |
| | | 50 | 251.42 | 250.60 | 251.48 | 251.87 | 251.48 | 251.33 | 250.89 |
| | | 25 | 250.49 | 249.79 | 250.96 | 251.57 | 250.96 | 250.59 | 249.86 |
| | | 10 | 250.49 | 249.26 | 250.00 | 251.04 | 250.00 | 249.68 | 249.24 |
| | | 5 | 249.49 | 248.89 | 249.43 | 250.10 | 249.38 | 249.15 | 248.87 |
| | | 2 | 249.09 | 248.41 | 248.66 | 249.29 | 248.66 | 248.26 | 248.44 |
| L-152+26 | | 100 | 250.74 | 250.56 | 251.22 | 251.67 | 251.22 | 251.11 | 250.75 |
| | | 50 | 250.02 | 249.94 | 250.75 | 251.19 | 25.74 | 250.58 | 250.00 |
| | | 25 | 249.72 | 249.48 | 250.02 | 250.81 | 250.02 | 249.96 | 249.55 |
| | | 10 | 249.16 | 248.97 | 249.70 | 250.21 | 249.70 | 249.43 | 248.95 |
| | | 5 | 248.79 | 248.58 | 249.20 | 249.78 | 249.16 | 248.91 | 248.56 |
| | | 2 | 248.36 | 248.06 | 248.38 | 249.07 | 248.38 | 247.95 | 248.10 |
| L-151+27 | | 100 | 248.66 | 248.47 | 249.30 | 249.75 | 249.30 | 249.71 | 248.68 |
| | | 50 | 248.22 | 248.02 | 248.77 | 249.28 | 248.76 | 248.59 | 248.19 |
| | | 25 | 247.69 | 248.28 | 248.22 | 248.77 | 248.22 | 248.06 | 247.53 |
| | | 10 | 246.83 | 246.51 | 247.83 | 248.31 | 247.83 | 247.54 | 246.54 |
| | | 5 | 246.33 | 246.13 | 247.27 | 248.00 | 247.23 | 246.95 | 246.11 |
| | | 2 | 245.93 | 245.68 | 246.35 | 247.25 | 246.35 | 245.85 | 245.72 |
| L-148+89 | 249.45 | 100 | 248.77 | 248.59 | 249.38 | 249.82 | 249.38 | 249.26 | 248.79 |
| | | 50 | 248.35 | 248.16 | 248.86 | 249.36 | 248.86 | 248.69 | 248.32 |
| | | 25 | 247.85 | 247.44 | 248.35 | 248.87 | 248.35 | 248.20 | 247.69 |
| | | 10 | 246.99 | 246.61 | 247.99 | 248.44 | 247.99 | 247.71 | 246.67 |
| | | 5 | 246.40 | 246.15 | 247.43 | 248.15 | 247.90 | 247.12 | 246.14 |
| | | 2 | 245.90 | 245.57 | 246.49 | 247.41 | 246.49 | 245.93 | 245.63 |
| L-145+26 | 249.45 | 100 | 247.73 | 247.58 | 248.36 | 248.75 | 248.36 | 248.26 | 247.76 |
| | | 50 | 247.24 | 246.95 | 247.88 | 248.35 | 247.88 | 247.74 | 247.22 |
| | | 25 | 246.48 | 245.99 | 247.24 | 247.86 | 247.24 | 246.99 | 246.35 |
| | | 10 | 245.40 | 244.94 | 246.68 | 247.39 | 246.68 | 246.38 | 245.18 |
| | | 5 | 244.71 | 244.39 | 246.07 | 246.96 | 246.04 | 245.78 | 244.48 |
| | | 2 | 244.11 | 243.77 | 245.26 | 246.15 | 245.27 | 244.63 | 243.83 |
| L-141+61 | | 100 | 247.48 | 247.36 | 248.11 | 248.57 | 248.11 | 248.00 | 247.52 |
| | | 50 | 247.05 | 246.85 | 247.65 | 248.1 | 247.64 | 247.53 | 247.04 |
| | | 25 | 246.23 | 245.73 | 247.05 | 247.64 | 247.05 | 246.90 | 246.10 |
| | | 10 | 244.99 | 244.41 | 246.47 | 247.17 | 246.47 | 246.14 | 244.77 |
| | | 5 | 244.05 | 243.65 | 245.83 | 246.86 | 245.80 | 245.50 | 243.81 |
| | | 2 | 243.24 | 242.75 | 244.92 | 245.93 | 244.92 | 244.17 | 242.84 |
| L-134+00 | 248.22 | 100 | 246.43 | 246.27 | 245.54 | 245.66 | 245.53 | 245.42 | 246.49 |
| | | 50 | 245.87 | 245.63 | 244.80 | 245.04 | 244.79 | 244.67 | 245.88 |
| | | 25 | 245.07 | 244.70 | 243.96 | 244.37 | 243.95 | 243.72 | 245.04 |
| | | 10 | 243.91 | 243.47 | 242.99 | 243.53 | 242.98 | 242.77 | 243.81 |
| | | 5 | 243.08 | 242.70 | 242.26 | 242.83 | 242.25 | 242.07 | 242.92 |
| | | 2 | 242.09 | 241.57 | 241.23 | 241.86 | 241.23 | 241.02 | 241.81 |
| L-128+35 | 248.19 | 100 | 243.96 | 243.84 | 243.37 | 243.49 | 243.37 | 243.28 | 244.18 |
| | | 50 | 243.52 | 243.35 | 242.85 | 243.04 | 242.85 | 242.76 | 243.67 |
| | | 25 | 242.97 | 242.72 | 242.34 | 242.61 | 242.34 | 242.18 | 243.05 |
| | | 10 | 242.28 | 241.99 | 241.56 | 242.06 | 241.56 | 241.37 | 242.30 |
| | | 5 | 241.63 | 241.31 | 240.92 | 241.44 | 240.92 | 240.77 | 241.58 |
| | | 2 | 240.76 | 240.47 | 240.21 | 240.66 | 240.21 | 240.00 | 240.64 |
| L-126+60 | 244.83 | 100 | 243.90 | 243.78 | 243.31 | 243.43 | 243.31 | 243.22 | 244.13 |
| | | 50 | 243.46 | 243.29 | 242.78 | 242.97 | 242.78 | 242.69 | 243.62 |
| | | 25 | 242.90 | 242.65 | 242.25 | 242.54 | 242.25 | 242.10 | 242.98 |
| | | 10 | 242.19 | 241.89 | 241.45 | 241.97 | 241.45 | 241.26 | 242.22 |
| | | 5 | 241.52 | 241.20 | 240.79 | 241.33 | 240.79 | 240.64 | 241.48 |
| | | 2 | 240.63 | 240.33 | 240.05 | 240.53 | 240.05 | 239.83 | 240.51 |

###.## Floodplain elevation is within 0.50 feet of critical elevation, but does not exceed the critical elevation.

###.## Floodplain elevation exceeds the critical elevation.

Note: The enumeration of the scenarios in the above sample table does not define the expected number of analyses in the final projects and reports.



OVERTON BAYOU
718.6 acres

LENOX BAYOU
499.2 acres

ARLINGTON BAYOU
215.1 acres

LICK CREEK
1237.2 acres

ROYSTER BAYOU
378.2 acres

IDLEWILD BAYOU
385.7 acres

N NOT TO SCALE

OVERALL STUDY AREA

CONSULTANT LOGO



| | | |
|---------------|------------------------|---------------------|
| E1 Exhibit | 0000001 Project No. | August 2013 Date |
|---------------|------------------------|---------------------|



NOT TO SCALE

**LENOX BAYOU ALIGNMENT
& SUB-BASINS**

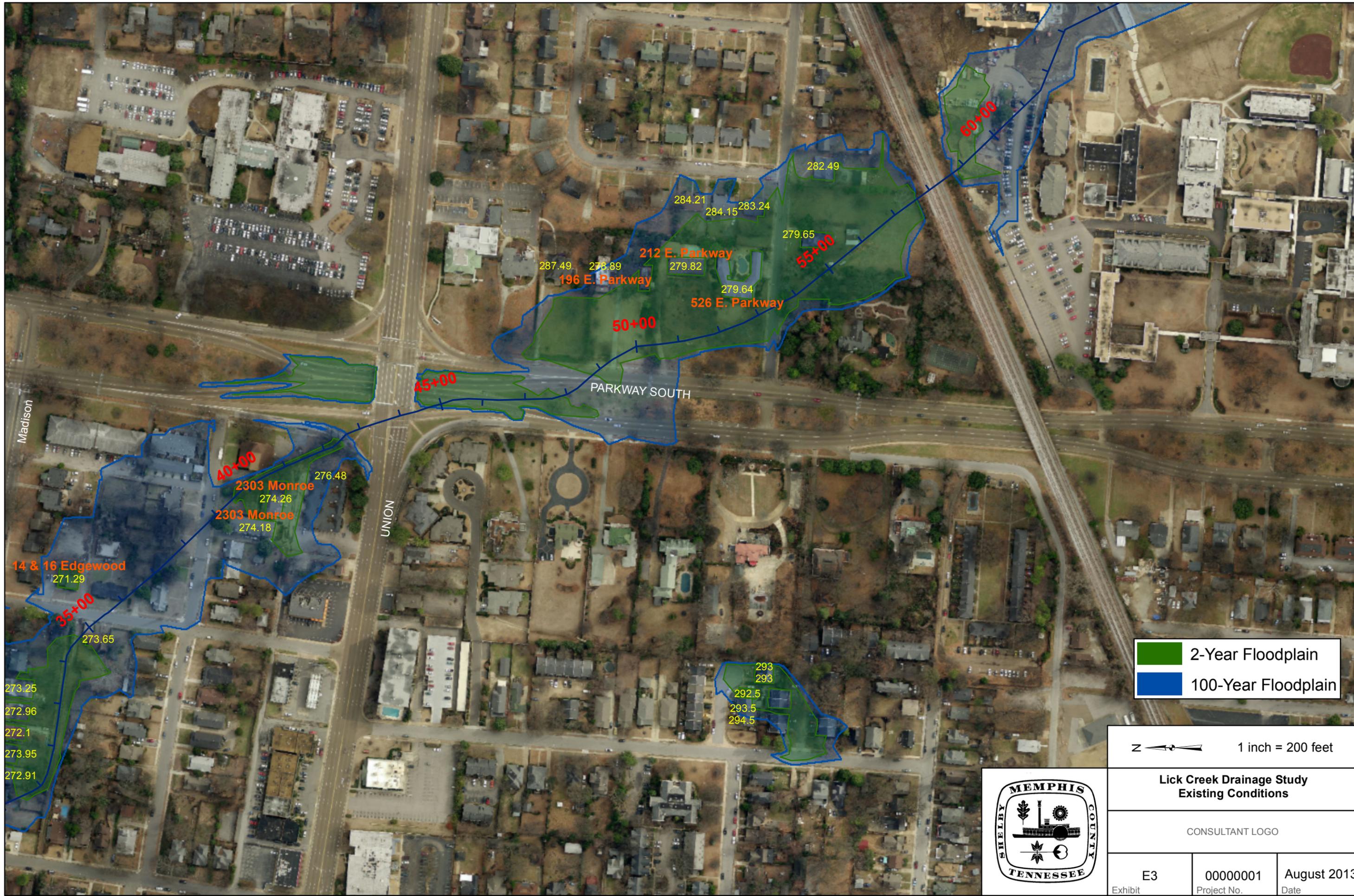
CONSULTANT LOGO



E2
Exhibit

00000001
Project No.

August 2013
Date



| | |
|---|---------------------|
|  | 2-Year Floodplain |
|  | 100-Year Floodplain |

N  1 inch = 200 feet

**Lick Creek Drainage Study
Existing Conditions**

CONSULTANT LOGO

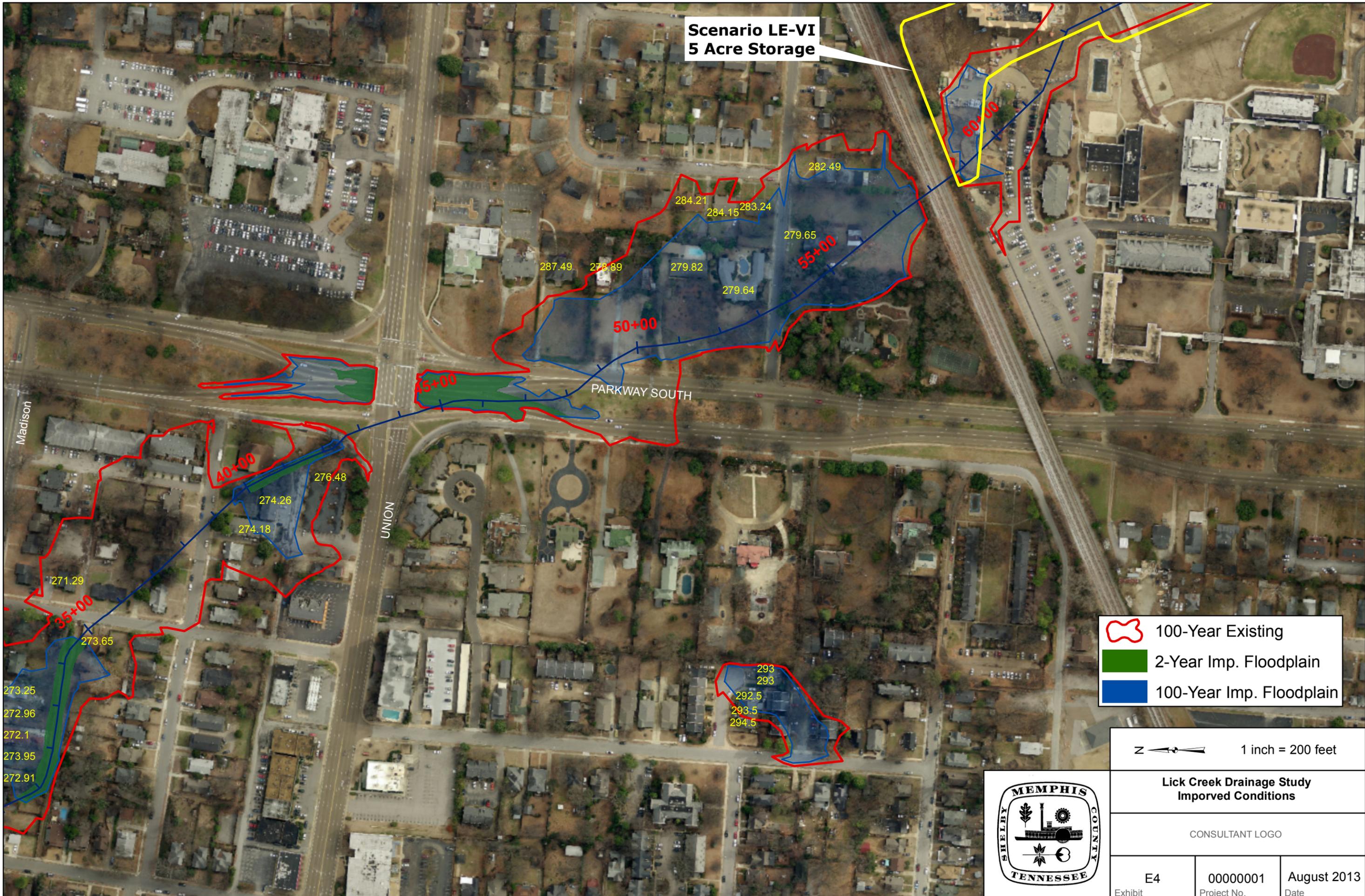


E3
Exhibit

0000001
Project No.

August 2013
Date

**Scenario LE-VI
5 Acre Storage**



-  100-Year Existing
-  2-Year Imp. Floodplain
-  100-Year Imp. Floodplain

N  1 inch = 200 feet

**Lick Creek Drainage Study
Improved Conditions**

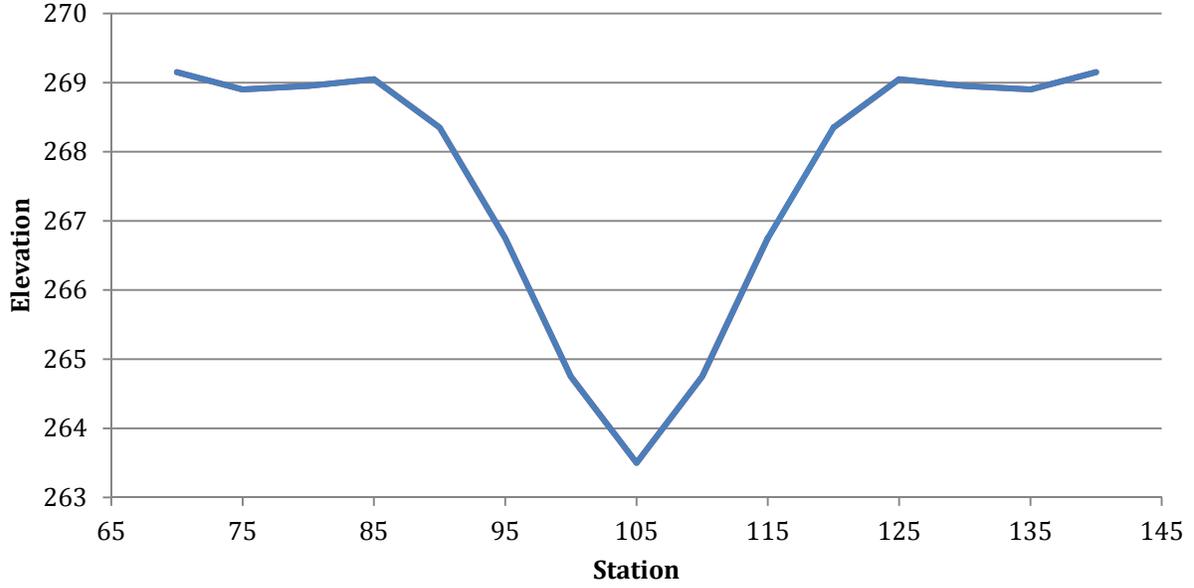
CONSULTANT LOGO



| | | |
|---------------|------------------------|---------------------|
| E4 Exhibit | 0000001 Project No. | August 2013 Date |
|---------------|------------------------|---------------------|

Example Cross-Section Exhibits

Sta. 15+32



Sta. 10+79

