



# Agenda



Missoula County  
South Avenue Bridge Project

Subject:	Project TDC Meeting No. 01	Meeting Location:	HDR Engineering Inc. Office 700 SW Higgins Street, Suite 200 (Rock Creek Conference Room)
Meeting Date:	May 10, 2016; 12:00 PM (Mountain)	Conference Call Information:	Call-in: n/a Code: n/a
Notes by:	Chris Kelly	Minutes Issued:	May 13, 2016

### Attendees (please sign attendance list):

Name	Organization	Present	Phone	Name	Organization	Present	Phone

Abbreviations: Msla Co – Missoula County; MDT – Montana Department of Transportation; HDR – HDR Engineering, Inc.; DJ&A – DJ&A; TT – Tetra Tech; HRA – Historical Research Associates; MBA – Maclay Bridge Alliance; MBC – Maclay Bridge Coalition.

### Meeting Purpose:

Conduct preliminary Technical Design Committee meeting to discuss purpose of the TDC, overview project status and schedule, and identify a time for conducting Public Meeting No. 2.

### Discussion Items:

The following items were discussed at the meeting. Any additions or corrections should be sent to Chris Kelly within three (3) business days after receipt or the items and notes will be assumed to be accurate as shown.

Section 1 - Introductions and Committee Purpose
1.1 Formal Introductions 1.2 Purpose of TDC 1.3 Meeting Ground Rules

Section 2 -
<b>Field Work</b> <b>Survey:</b> <ul style="list-style-type: none"> <li>• Cadastral Survey – as much as been completed as possible, based on legal access to property. Enough has been developed to move forward.</li> <li>• All in-river cross-sectioning survey has been completed (bathymetric equipment and jet boat).</li> <li>• Topographical survey has been completed.</li> </ul>

- LiDAR - Due to access limitations and need for getting the best possible survey for the floodway. \$19K extra to fly the area with a helicopter and LiDAR. Able to survey most of the river bottom with LiDAR.
- Above ground historical survey on existing Maclay bridge and within view shed – survey completed; report completed by Historical Research Associates, submitted to SHPO

### Geotechnical

- TetraTech originally planned for 4-5 borings in extension of South Avenue to get idea of general characteristics of the area. Based on access locations, could only conduct two borings. HDR/TetraTech are comfortable with the results such that the project can continue forward.
- Heaving sands found, not uncommon for a river bottom area, but it required a change in drilling rig.
- Tetra Tech is preparing a preliminary report summarizing two borings and materials found, and preliminary recommendations on foundation type.
- HDR to re-assess on additional borings (number and location) after report has been received and preferred bridge alternate is determined.

### Bridge

- Bridge and roadway are developed in unison to develop the preferred alternative.
- Two alignments being considered

Alignment 1: FWP had concerns about impacts to O'Brien Creek at the confluence, asked for a 50 FT no-disturbance buffer; based on that, preliminary alignment shifted. 1 or 2 piers in the river depending on alternate. Looking at 3 different cross sections (different bridge width, depending on pedestrian accommodations). All steel plate girder bridges. An arch or a truss on the heavy skew isn't practical or cost effective. Steel allows you to span further compared to concrete which would require more piers, which is no ideal for this location.

Alignment 2: Has sweeping curves on either end to possibly calm traffic. Also crosses the river at a more perpendicular angle, to reduce the skew and potentially reduces bridge cost. 1 or 2 piers in the active channel depending on the alternate, span lengths are shorter, depth of superstructures are shallower, grades are lower. Typical sections are the same as for Alternative 1. Looking at steel plate girders. Also considering a truss alternative similar to the Maclay bridge but designed to modern requirements; distance from roadway to low chord reduces the grade raise needed.

- Clear span alternative – no piers in the active channel, can do with a long truss (400+ ft) or tied arch structure. These options cost significantly more, but have the least permanent impact on the river channel.
- Girder alternatives: Likely the most cost effective options.
- Additional evaluation of bridge options will continue and the pros/cons/costs will be presented at the next TDC meeting
- Next public meeting: will we have all of these options available to the public?. move them along, better identify pros and cons and cost, discuss at TDC and decide what to present at the public meeting.

### Roadway

- Road is being designed as a collector.
- North Avenue is classified as a collector.
- Defines minimum radius for a curb (525 feet), maximum vertical grade up and over the river, and the design speed for the facility (varies from 25-45 mph; not necessarily what would be posted, just what it's designed for to determine grade, shoulder width, etc.)

### Hydraulics

- Completed initial evaluation, set up hydraulic model, and looked at DFIRM mapping (FEMA floodplain mapping), and have modeled the area.
- Located the effective model includes scans of 1974 hydraulic model. Completed in ACOE HEC2 model. During conversion, inconsistencies between floodplain and floodway model were found. Issues worked themselves out, not right at the downstream end but don't impact project area.
- Model conversion – ran well, provided a good match on floodplain boundaries.
- To compare to proposed conditions, needed to add additional cross sections to model to define project area and impacts the project will have on the floodplain. Added a couple additional cross sections up stream and downstream

of alignment, some additional cross sections up stream, as location of cross sections don't meet current FEMA regulations.

- Additional cross sections – found the effectively mapped floodway doesn't match FEMA standards. (if floodplain is fill, 100 year surface elevation raised 100 feet). Currently, it would raise 2 FT. Existing map is wrong, can't do analysis on alternatives because we don't have a good baseline.
- Met with DNRC and FEMA, proposed a solution. Both agreed that the existing map needs to be fixed; HDR is working on that now. It will widen the effective floodway. HDR will use that as the existing conditions map, then impacts will be compared from there.
- Shaded Area: West bank follows River Pines Road. If this is used as the boundary, between D and E we would have a rise of over 2 feet in the floodway, rather than the floodplain.
- Preliminary Floodway (Red Line): Preliminary floodway, where things SHOULD be. Gets really wide at E. Upstream, between E and F, can be narrower than it is now (spacing of cross sections for effective model).
- Brown Line (FEMA cross section locations): Between E and F are a very long space (4,000 feet); issue is between D and E.
- River Pines Road is a manmade levee.

### **Environmental**

- Cultural Resources Survey conducted, submitted to SHPO. One property determined eligible. SHPO concurrence on no adverse effect determination.
- Need to conduct archaeological survey of alignment once it has been finalized.
- Wetland delineation and habitat assessment is completed, BRR and BA are being developed, following MDT processes
- Environmental document and Biological Assessment on hold pending further design progression.
- Noise Analysis. Following contract approval (Missoula County and MDT), MDT asked for changes, also identified need for a detailed noise analysis, which was not part of the original scope of services (\$10K addition to contract). Monitoring is done (ambient data collected). Noise modeling and report are on hold until design progresses.

## **Section 3 - TDC Input and Other Technical Items**

### **Project Design Criteria**

### **Project Schedule**

#### **Set date for next public meeting**

- Second public meeting was planned 3<sup>rd</sup> week of March, which has been postponed due to issues with the existing mapped floodway.

#### **Next TDC Meeting**

- Next Steps: Show alternatives at next TDC meeting, ask for input from TDC to narrow
- Dan suggested scheduling public meeting for 2 weeks after next TDC.
- Set TDC for monthly meetings; discuss alternatives in a month, then set date for next public meeting.
- Next TDC meeting: Dan Harmon to schedule for approximately a month from now.
- Ladd: Add public river access to next agenda.

## **Section 4 - Q&A**

- Q: (Chris Brick) What is the extent of the survey, reach of the LIDAR, boundaries, etc.
- A: enough to obtain cross sections for hydraulic analysis. Confluence of Clark Fork up to cross section F, have data through that reach, up to confluence.
- Q: (Mike Burnside) – when will the public second meeting be scheduled?

- A: that will be determined at this meeting, hopefully.
- Q: is a condemnation process underway to get access to the property?
- A: No, environmental process needs to be completed before that is determined.
- Q: (Mike Burnside) is the lack of access impeding the ability to get the information needed to move forward?
- A: No, we have the information we need. Additional environmental fieldwork will be needed for final permitting. Often, archaeological work is conducted during construction, with staff onsite.
- Q: Is the lack of access to property impeding project design?
- A: We have 2 borings, there is consistency within the area. We will need additional borings in the future to reduce construction risk.
- Q: What is the extend of public easement from south avenue to O'Brien Creek
- A: Yes. (insert details)
- What is the difference between the preliminary floodway and the effective floodway?
- We'll discuss that shortly
- Q: (Mike) Did the tied arch have advantages over the truss?
- A: It has a similar problem, can be viewed as fracture critical. From a cost standpoint, they are similar but the evaluation hasn't gotten the point of developing costs. Span length and site layout would be the similar if not the same.
- Q: (Roger) Are you allowed rise?
- A: Need to keep the rise below 6 inches. Cannot construct fill into the floodway.
- Q: (Roger Austin) "Commercial" reference to roadway design parameters?
- A: Same road width for collector and commercial.
- Q: (Roger Austin) Are pedestrian accommodations included in those widths?
- A: No, those will be additional to the roadway width.
- Q: (by Chris Brick) What is the different at the curve of O'Brien Creek in elevation?
- A: Don't know the exact number, but it will be different. It depends on the bridge alternate. Really long span has a deeper superstructure and more grade raise needed; shorter spans mean shallower structure and less grade raise. Trying to keep the grade at 5% vertical grade to meet ADA.
- Q: (Roger) Will this be formalized with a LOMR?
- A: discussed this with FEMA and DNRC (best procedure). HDR will submit and get their concurrence, but will not go through the formal LOMR. A LOMR will be needed, but not until the proposed bridge is designed.
- Q: (Mike Burnside) The shaded area is FEMA's mapping and it should be between the red lines?
- A: Correct. It's accurate at cross sections, but with more cross sections added in, it's incorrect, it was a little too coarse.
- Q: (Roger): Regarding changing floodway. Will there be provisions for the impacted homeowners when you change from flood fringe to a floodway designation?
- A: It will go through a public review and comment period, everyone will have a chance to provide input to the changes. It's a difficult situation.
- Q: (Harmon): Is this a common occurrence, post-Katrina?
- A: It's pretty common, when you perform a new study with better data and compare to old studies. Often, when you delineate a new floodplain, it's not that they are in a new floodplain, they are just in a new delineation. The intent is to protect lives and property.
- Q: (Mike Burnside) River Pines Road wasn't designed to be a levee and constructed as a levee, so they can't be certified as levee structures. Since this didn't go through this process, it can't be utilized as part of the study?
- A: Correct. You have to treat it like it's not a levee.
- Q: (Dave Loomis) The Dark Red Line – this is the existing conditions? And after the bridge is constructed the red line will change again?
- A: Correct. After the bridge is constructed, the change will be minor.
- Q: (Mike Burnside) What is the impact of removing Maclay Bridge?
- A: Found that the river is steep enough that Maclay Bridge removal impacts don't reach that far upstream.
- Q: (Bob Schweitzer) When Maclay is removed, that includes the bridge ends and piers?

- A: Correct; piers are typically removed 3 FT below the deepest part of the thalweg. Nobody knows what the piers are actually sitting on.
- Q: (Mike Burnside) Will there be any changes to River Pines Road?
- A: The project will stabilize the banks at each end of the existing bridge.
- Q: (Ladd Knotek) What about the constriction on the approaches? It appears they create a pinch point. Consider increasing cross sectional area when Maclay is removed.
- A: It is uncertain how far the project will be able to pull the bank back.
- Q: (Dave Loomis) River Pines Road rip rap – is the County funding that? How is it paid for?
- A: Removal of bridge is included in the project funds right now. Details for what happens up and downstream is not determined yet.
- Q: (Jon Schick) What is FEMA's schedule for concurrence with our new baseline.
- A: Depends on their internal workload. Hopefully 2 weeks response time. Will depend upon how busy the FEMA staff is?

**Action Items:**

Item No.	Description	Due By	Resp.
1	Set next TDC meeting		D. Harmon

**Attachments:**

- May 10, 2016 Sign-in Sheet (Don and Mike are alternates)
- Figure: Preliminary Floodway Alignment (provided at meeting)
- Additional description of existing Floodway/Floodplain issue (below)

Dan March gave a summary of floodplain issues associated with the South Avenue Bridge project as follows:

HDR obtained hard copy input/output file printouts for the currently effective hydraulic model (1974 HEC2). The data was used to recreate the Effective Model using the HEC-RAS hydraulic model software. Cross section elevations were updated using topographic data generated for this project to create a Corrected Effective Model. Model results were compared to the effective Base Flood Elevations (BFEs) and found to be relatively close for the floodplain and floodway runs within the project area.

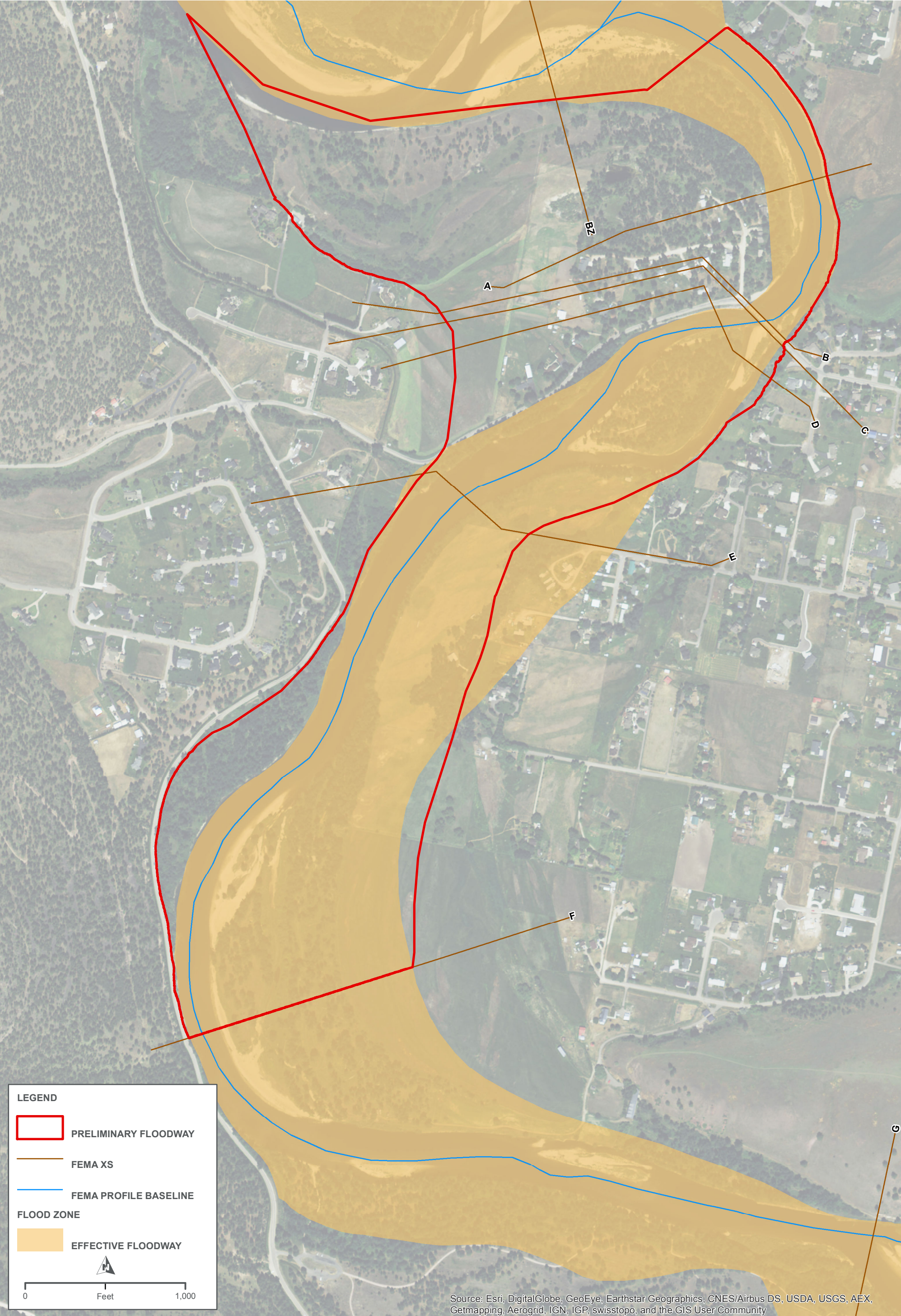
An Existing Conditions hydraulic model was then created by adding cross sections throughout the analyzed reach and adjacent to the proposed bridge location to add detail within the project area. When this model was run it was discovered that the effective floodway boundary would result in a rise greater than 0.5' over the BFE, which is contrary to County, State and Federal regulations. Dan emphasized that these results are under existing conditions, without any of the proposed South Avenue bridge work included.

Dan indicated that a conference call between HDR, Missoula County, Montana DNRC, and FEMA representatives was conducted to discuss how best to proceed. HDR and Missoula County proposed that the effective map be revised to remap the floodway boundaries within the project area. This revised map will be used for the baseline to evaluate impacts of the South Avenue Bridge Alternatives. This revised map will not go through the formal adoption process since it will not include South Avenue Bridge. After construction is complete, it is planned that a Letter of Map Revision (LOMR) will be submitted that will correct the floodway boundary and will include South Avenue Bridge.





# PRELIMINARY



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

**PROJECT: SOUTH AVENUE BRIDGE  
PRELIMINARY FLOODWAY ALIGNMENT**

