Cahaba River Society

October 14, 2011

Mr. Brian C. Davis
Division Engineer
Alabama Department of Transportation
P.O. Box 2745
Birmingham, AL 35202-2745
ATTN: Mrs. Sandra F. P. Bonner

Regarding: Reevaluation of Project HPP-1602(530)(529)(502)(531)(532), Birmingham Northern Beltline SR-959.

Dear Mr. Davis,

The Cahaba River Society is a 501 (c) 3 non-profit river conservation group located in Birmingham, Alabama. Our mission is to restore and protect the Cahaba River and its rich diversity of life. The diverse lives depending on the Cahaba include the 600,000 people and numerous businesses in the Birmingham Water Board service area relying on the River as a major source of drinking water as well as its internationally significant diversity of freshwater wildlife.

SUMMARY

The Cahaba River Society recognizes that the communities of our watershed and the Birmingham metro area desire the benefits of growth. The Cahaba River Society is a supporter of *sustainable* growth in the region, which we define as growth that is environmentally, socially and economically responsible. CRS specializes in education and collaboration to advocate for water-protective development and revitalization, and we have directly participated in many cost-effective development solutions now on the ground in the Birmingham-Hoover metro area.

The range of opinions on the Cahaba River Society Board of Directors and among our members about the Northern Beltline reflects the differing opinions in the broader community. Based on careful study and consideration, we have determined that CRS's best role is to ensure that decisions about the Beltline are based on good and sufficient environmental information, and that, if the community determines the Beltline should move forward, best practices in planning, design and construction will used so that the Cahaba and our region's drinking water are protected to the greatest extent possible.

Environmental review regulations need to be followed to ensure that Beltline decision-makers and the public can fully consider and weigh an assessment of the benefits and impacts of the project and its alternatives.

However, adequate environmental information has not yet been produced to aid good decision-making about the Beltline. Under Council on Environmental Quality regulations, a Supplemental Environmental Impact Statement (SEIS) must be prepared for these reasons:

- The 1997 Final Environment Impact Statement (FEIS) is 13+ years out of date. There have been many significant changes in the affected environment since 1997. The Cahaba's declining water quality and habitat led to its being declared an impaired waterway by the State of Alabama; a TMDL study is nearly complete to guide reducing sediment pollution and returning the River to health, which should be considered; the Cahaba is now recognized as a freshwater biodiversity resource of global significance; and critical habitat for federally listed species has been designated recognizing these values.
- Watershed science has greatly progressed since 1997, which significantly changes the method for evaluating impacts of highways and growth on watersheds, drinking water and wildlife and for determining the best practices to mitigate those impacts. The long-term, post-construction impacts of stormwater runoff and other hydrology changes caused by urbanization, such as the Beltline and its intended growth, are now understood to be the most important source of the most important pollution problem in the Cahaba River has not, up to now, been studied and needs to be addressed in a SEIS.
- The 1997 FEIS did not include an assessment of indirect effects or cumulative impacts as required by NEPA / Council on Environmental Quality regulations. An adequate Indirect Effects and Cumulative Impacts (IE/CI) study is essential to project the impacts of urbanization on stormwater runoff and other hydrologic changes and to adequately evaluate impacts to the Cahaba watershed and the region's drinking water.
- There are significant changes to the project itself, including 50% greater impervious surface and potentially greater construction footprint, which should be considered in the IE/CI study and SEIS. Impacts of ALDOT's proposal to bury the Cahaba and many of its tributaries in culverts have not been studied together with other watershed impacts in an IE/CI study.
- Missing information on the benefits and impacts of the Beltline that could be provided by a SEIS is essential for a thoughtful assessment by the public and other federal agencies that are required to comment on this project

We expect our recommendations will be mischaracterized by some as an attempt by the Cahaba River Society (CRS) to delay this project. However, providing sufficient environmental impact information under NEPA is not a delaying tactic but a legal requirement, and also is needed for good decision-making. The information simply is not available to weigh this project's benefits and costs, evaluate alternatives, or determine the best way to mitigate impacts to protect our region's vital water resources. We point out, for instance, that the essential IE/CI analysis has been underway for over 2 years and should be done by now. Our goal is not delay but progress that complies with existing laws and uses the knowledge and techniques -- the best practices -- that have been developed since the Beltline project was first proposed.

If the project is deemed an appropriate investment after adequate study, then significant improvements will be needed to achieve best practices. An improved route and design for the eastern segment, including potentially a parkway design, should be studied to avoid or minimize

impacts. The Cahaba mainstem and major tributaries should be bridged, and protective and recreational buffers would be needed along them. Improved construction practices and management will be necessary over current ALDOT standard practices. Post-construction stormwater design must be incorporated. These improvements will be necessary not only for the Beltline, but also for all growth that follows the Beltline. The Cahaba River Society stands ready to serve as an expert resource to explore and achieve best practices that are as protective of the Cahaba River watershed as possible.

BACKGROUND AND CAHABA RIVER SOCIETY POSITION

Many people, organizations and businesses promote the Northern Beltline project as an important potential economic engine for the region. There are also many interests that have raised concerns about the Beltline or oppose it for a variety of reasons. Within the leadership and constituency of the Cahaba River Society there are diverse views about the Northern Beltline that reflect this debate in the broader community. We have engaged in intensive study and conversation, both internally and with our varied constituents, concerning our position on this project and our most useful role in the ongoing public debate about it.

The environmental, social and economic concerns that we have raised for many years about the Northern Beltline[1] must be addressed before final decisions are made that would advance the project further. CRS has informed ALDOT of significant gaps in environmental studies that compel preparation of a SEIS since 2003. At the time of the September 27th and 29th, 2011 public hearings, ALDOT had not provided sufficient information on these essential topics to enable ALDOT or the public to properly evaluate the proposed project. Public comment must be allowed *after* that crucial information is made available and prior to any decision as to whether further environmental study is necessary before proceeding with the project.

Since the approval of the original FEIS and Record of Decision (ROD), there have been many significant changes in information concerning affected environmental resources, impact of development on water resources, and best practices to mitigate impacts, as further described below. In addition, an IE/CI was never performed as required by NEPA. Accepted watershed science now recognizes that cumulative and indirect impacts of growth have the greatest potential for negative impact to water resources, thus an IE/CI is essential to adequately assess, minimize and mitigate the potential impacts of the Beltline project on our region's water resources. All of these gaps in essential information compel preparation of a SEIS and reevaluation of the route and design as it impacts the Cahaba River headwaters.

The Cahaba River Society advocates for water-sustaining growth. Our track record of collaborative and educational work for conservation development shows that sustainable growth is possible, and that success stories are already occurring in our region. Over the past six years, for instance, the Society has formally awarded 13 local projects for excellence in water-sustaining design and construction along with 60 development-related firms and governmental entities involved in these projects. The Society positively collaborated with the development teams in the

[1] For example, see our attached July 1, 2003 letter to James Horsley, ALDOT Division Engineer regarding HPP-1602(532) Birmigham Northern Beltline.

design and implementation of four of these award-winning, water-smart projects and many other planned development projects. These include major projects, such as the Shops of Grand River, Bass Pro Shops, Norfolk-Southern Intermodal Facility, and Hewitt-Trussville High School.

Our concerns about the Northern Beltline proposal are based on sound and accepted science on watersheds and how they function. If the Northern Beltline is built crossing the upper Cahaba watershed as currently described, even with the best possible design, construction, and land management practices, there will be degradation to the River and to tributaries affected by the Beltline and it's indirect development impacts. The science regarding impacts of land use on watershed ecosystems and water resources supports the concern that a highway of this magnitude and the intensive growth it is intended to create cannot be built without negative impacts to the River and those people and businesses who depend on its good health[2].

These negative impacts, as described in greater detail below, will affect one of the Birmingham metro area's primary drinking water sources, the globally-significant freshwater life in the River, recreation, and other values and uses of the Cahaba River. This tradeoff should be fully studied, understood, acknowledged and taken into consideration – rather than being dismissed – as ALDOT and the public considers the future of the Beltline.

There are many best practices that can be employed to lessen the magnitude of the Beltline's negative impacts to the Cahaba River. As yet, essential post-construction best practices are not being used in Alabama highway design and construction and are not often used by Alabama's development community or local governments (projects described above are notable examples). If a decision is made to build the Beltline through the upper Cahaba watershed – given its great value – then all reasonable and achievable best practices must be employed to reduce impacts to the greatest extent possible. This will require substantial changes to the current project in the vicinity of Clay, Alabama, both in route and design. Similarly, the land use plans, designs and management for the growth that is intended to follow the Beltline's construction need significant improvement over standard practices typically required by local governments. Under NEPA regulations a SEIS should include mitigation undertaken by local governments to achieve this.

Should the Beltline project move ahead, the Cahaba River Society wishes to serve as an expert resource, as well as a catalyst to engage other expert resources, to help ensure the project is built using best practices that are as protective of the Cahaba River watershed as possible. Our specific recommendations, based on information about the Beltline that is currently available, are outlined below as a starting point for conversation.

However, good decisions for sustainable development that are protective of water resources can only be made in the light of full information. To obtain that information, ALDOT must complete a SEIS, including a complete assessment of IE/CI, for the Northern Beltline and its growth impacts, and make this information available for public review, involvement and comment prior to finalizing environmental review reports to the Federal Highway Administration and proceeding

[2]May, C.W. 1996.*Assessment of the Cumulative Effects of Urbanization on Small Streams in the Puget Sound Lowland Ecoregion: Implications for Salmonid Resource Management.*Ph.D. dissertation, University of Washington, Seattle.And, Wood, P.J. and P.D. Armitage. 1997. Biological Effects of Fine Sediment in the Lotic Environment. Environmental Management 21(2): 203-217. Springer Verlag. Many other references are also available on this topic.

with the project. This information is essential to determine the best way to proceed, while at the same time conserving the Cahaba River and our drinking water.

CHANGES IN THE DESIGN SCOPE AND/OR THE AFFECTED ENVIRONMENT SINCE ISSUANCE OF THE 1997 FEIS AND THE 1999 ROD.

Advances in Understanding of Post-Construction impacts to Watersheds

Studies of watersheds have demonstrated that the largest and most important source of the excessive sediment loading to streams in urbanizing watersheds is the "in-stream" erosion and streambed scouring that results from the increased volume of water from additional imperviousness that attends development of conventional design. For example, the EPA's study of Shades Creek in the Cahaba River basin found that 67% of the sediment load was attributable to the increased in-stream erosion[3] due to urbanization. Thus for Shades Creek, twice as much sediment is derived from these long-term, post-construction "in-stream" processes due to increased imperviousness and volume of runoff in a watershed than that which was due to "overland" sources such as short-term sediment runoff from construction sites.

The 1997 FEIS makes the following incorrect statement on page 4-105:

> *Most of the water pollution would be attributed to erosion and siltation of streams. This will be a temporary condition and the streams should return to normal conditions after project construction.*

That assertion is no longer supportable. It is now known that negative impacts from sedimentation events can last for decades and are not accurately described as "temporary"[4]. It is also clear that the cumulative and indirect impacts of highways and their attendant growth on hydrology and sedimentation are potentially the greatest impact to the health of water resources, freshwater wildlife, and human uses such as for drinking water. Therefore, an in-depth IE/CI analysis is essential for this project.

A second topic under this heading is the recognition of the growing threat to drinking water supplies due to hydrological changes in urbanizing watersheds. Hydrologists, land use planners, and water supply planners as well as river advocates now recognize that the quality and availability of drinking water supplies are compromised by urbanization of drinking water watersheds. Increased imperviousness increases runoff and pollution and reduces groundwater recharge during rains. Reduction of groundwater recharge results in less raw water supply during dry weather and drought both in the river and via wells. The cost of treating raw water for drinking water also increases as the watershed urbanizes, pollutants increase, and alternative water sources must be developed and funded by increased water rates. Our conversations with staff at the Birmingham Water Works indicate that the supply of raw water in the Cahaba at the Water Board intakes may diminish by as much as 30% due to the hydrological modifications associated with build-out of development in the upper Cahaba River watershed. Development in the Cahaba River

[3] http://www.epa.gov/crem/seminars/shades_sediment.ppt

[4] G.M. Kondolf, *et al.*, 2006. Process-based ecological river restoration: Visualizing three-dimensional connectivity and dynamic vectors to recover lost linkages. Ecology and Society 11: 5

headwaters resulting from the Beltline would certainly be a significant component of that total build out. Impacts to the supply and cost of drinking water will affect all customers of the Birmingham Water Board system. The City of Trussville water system relies on wells, with groundwater recharge from rain in the vicinity of Trussville. It should be determined if development resulting from the Beltline could also impact Trussville's water supply. The 1997 FEIS makes no mention of these potential impacts to drinking water. An adequate assessment of the IE/CI of this project is necessary to address this vitally important issue.

Thus, there is significant new information about the affected environment that results in significant new impacts that were not considered in the FEIS. Prior environmental decisions are no longer valid, and a SEIS is required. EPA has significant expertise on post-construction impacts associated with development and its mitigation. Under NEPA regulations, EPA should be consulted on a SEIS.

Advances in Best Design Practices for Roadways and Urban Growth

The improved understanding of the root-causes of stream degradation associated with urbanization has led to substantial and significant refinements in project design and stormwater management best practices. Known collectively as Green Infrastructure (GI) and Low Impact Development (LID), these approaches focus on mimicking as closely as feasible the pre-development hydrology of an area, to avoid or prevent the impacts described above. *Perfectly* matching pre-development hydrology is not possible; but far better matching is feasible and essential for better protecting stream health.

GI and LID are now recommended as best practices by the US EPA. None of the past or currently available environmental documents for the Beltline make any mention of using these approaches that are recognized as essential for minimizing the post-construction impacts on the Cahaba River and the region's drinking water. An IE/CI analysis is necessary to determine to what extent these practices can reduce negative impacts to drinking water and habitats.

Council on Environmental Quality regulations governing NEPA require that an EIS or SEIS must outline mitigations that should be undertaken by all responsible parties, even if they are not the project lead. The indirect growth impacts controlled by local governments following the Beltline will also degrade the regions drinking water and the Cahaba's other values unless GI and LID practices are used. Thus and SEIS is necessary to identify the improved GI and LID practices that need to be implemented by local governments who will benefit from Beltline induced growth.

Thus, there is significant new information about the affected environment that results in significant new impacts and mitigation best practices that were not considered in the FEIS. Prior environmental decisions are no longer valid, and a SEIS is required that includes an IE/CI analysis.

EPA has significant expertise on GI and LID approaches that should be used to mitigate these impacts. Under NEPA regulations, EPA should be consulted in this regard during the development of a SEIS.

Enhanced Responsibilities for Stormwater Management

ADEM's MS4 stormwater program will soon increase ALDOT's and local governments' responsibilities to control stormwater impacts, including post-construction requirements. ALDOT

does not currently have a post-construction program in place. The upcoming MS4 permit will certainly include requirements for adopting post-construction stormwater controls in future projects. Also, none of the current ALDOT documents for the Beltline have demonstrated that sufficient and feasible post-construction designs to minimize hydrologic changes are proposed. Incorporating post-construction practices could alter the footprint of the project.

According to the Summary of Preliminary Analysis Conducted for the Reevaluation of Project HPP-1602(530)(529)(502)(531)(532), Birmingham Northern Beltline SR-959 (the Reevaluation Document), the project will utilize BMP's *"from ALDOT's standard specifications." "The SWMP will be prepared pursuant to ALDOT standards and in accordance with ADEM regulations."* The Highway 98 project demonstrated serious failures in ALDOT construction sediment and erosion control *and* ADEM's oversight. Despite concerted effort at improvement in practices on ALDOT projects since then, recent BMP failure on the Centreville Bypass project shows that even ALDOT's enhanced specifications for priority projects still do not have the ability to prevent sediment pollution and need further improvement. The Beltline footprint and slope conditions will be far more challenging than the Centreville bypass, and no "enhanced" protections are currently proposed. ADEM has instituted some improvements to enforcement statewide, but numerous current examples prove that sediment violations are occurring with frequency under ADEM's regulatory oversight. Thus, this project would probably increase sediment pollution to 303(d)-listed segments of the Cahaba River.

So, there is significant new information about the affected environment that results in significant new impacts that were not considered in the FEIS. Prior environmental decisions are no longer valid, and a SEIS is required to show either that these impacts can be eliminated or minimized and mitigated.

EPA has significant expertise on advances in post-construction stormwater management. Under NEPA regulations, EPA should be consulted in this regard during the development of a SEIS.

Changes in the proposed "typical design section" from four-lanes to six-lanes

The Reevaluation Document indicates the current proposal increases in number of lanes from four to six (three lanes in each direction). The Reevaluation Document points out there will be an accompanying reduction of the median from 90 to 50 feet and asserts there will be no change in the project footprint. There is no mention of the ~50% increase in the amount of impervious surface that will result in increased volumes of stormwater runoff and the reduced flexibility in fitting the road to the landscape and managing post-construction runoff, thus requiring relatively increased amounts of grading and soil displacement. It appears that the project "footprint" of construction area and hydrologic impact will be significantly increased throughout the route.

Thus, there is a significant change to the project that results in significant new impacts that were not considered in the FEIS. Prior environmental decisions are no longer valid, and a SEIS is required that includes an IE/CI.

Cahaba River from US 80 to Interstate 59 added to ADEM's 303(d) list for excessive sediment

In July of 2002, ADEM finalized its FY 2000 303(d) list, Alabama's list of "impaired" waters. That decision classified the Cahaba River as impaired due to "siltation" and "other habitat alteration" as far north (upstream) on the Cahaba River as I-59 and prompted the need for a TMDL

study of sediment in the Cahaba River. Scientific evidence and experience in the Cahaba watershed demonstrate that sediment pollution from both construction activities and from post-construction hydrologic changes persists downstream for the entire length of the river and for many decades following an event[5]. Based on the current plans for the Beltline, on current experience of construction runoff from ALDOT highway projects such as violations at the Centreville Bypass site on June 17th, 2011, and on the expected indirect growth impacts and current experience throughout the state of sediment violations from construction sites, it is highly likely that the Beltline will cause increased sediment pollution into this sediment-impaired stretch of the Cahaba. Thus, there is significant new information about the affected environment that results in significant new impacts that were not considered in the FEIS. Prior environmental decisions are no longer valid, and a SEIS is required that includes an IE/CI.

ADEM's 2003 Draft Sediment TMDL is nearly complete

The Alabama Department of Environmental Management (ADEM) has been working on a Total Mass Daily Loading (TMDL) study of sediment in the Cahaba River for over a decade. ADEM staff have stated that the TMDL is under final review and is within a month of being finalized[6]. Insight from that study will be especially informative regarding the significance of post-construction sources of sediment loading to the Cahaba River. We expect the TMDL will indicate that hydrological modifications to the Cahaba River watershed from impervious surfaces associated with roads, rooftops, parking areas, etc., are the *primary* cause of the excessive sediment loading occurring in the Cahaba Rive, as was demonstrated in the Shades Creek TMDL. These impacts are collectively referred to as "post-construction" sediment impacts which ALDOT, up to now, has never dealt with in highway planning and design. None of the environmental assessments done thus far acknowledge indirect hydrological impacts. Thus, the most important source of the most important pollution problem in the Cahaba River has not, up to now, been studied and needs to be addressed in a SEIS.

The TMDL will include specific targets for reduction of sediment loading. A federally-funded project must be shown to be achievable within those targets. The upcoming MS4 Phase I stormwater permit for ALDOT will, if at least as stringent as the adopted Phase II permit, require ALDOT to control stormwater runoff so as to meet TMDL Wasteload Allocation limits. As noted above, it is likely that the Beltline project, as currently planned, and its indirect and cumulative impacts will increase sediment pollution in the Cahaba River. Thus, there is significant new information about the affected environment that results in significant new impacts that were not considered in the FEIS. Prior environmental decisions are no longer valid, and a SEIS is required that includes an IE/CI to demonstrate how the Beltline and its indirect and cumulative impacts will be achievable within TMDL WLA limits.

Critical Habitat Designation in the upper Cahaba River basin.

In 2004, the US Fish & Wildlife Service designated "Critical Habitat" for eight freshwater mussel species in the Cahaba River. That designation extends from to County Road 143 (Grants Mill

[5]For example, T.J. Beechie, *et al.*, 2010.Process-based Principles for Restoring River Ecosystems. BioScience: Vol. 60(3), pp. 209-222, and G.M. Kondolf, *et al.*, 2006. Process-based ecological river restoration: Visualizing three-dimensional connectivity and dynamic vectors to recover lost linkages. Ecology and Society 11: 5, among many other peer-reviewed articles on this topic.

[6] Jason Wilkins, ADEM TMDL staff, *pers. comm.*, October 4, 2011 meeting of the Cahaba Clean Water Partnership.

Road) in Jefferson County to State Highway 82 in Bibb County [7]. That designation requires that federally funded or authorized projects that may adversely modify critical habitat must consult with the Service to assure that the critical habitat is not destroyed or adversely modified. Consideration of the potential for critical habitat modification is a different standard than was used for the physical presence of threatened and endangered species that was reviewed by the Service for the 1997 FEIS.

Critical Habitat is designated to help provide the following essential habitat components for aquatic species[8]:

1. Geomorphically stable stream and river banks and channels
2. A stream flow regime sufficient for normal behavior, growth, and survival of all life stages of mussels and their fish hosts
3. Acceptable water-quality conditions necessary for normal behavior, growth, and viability of all life stages
4. Sand, gravel, and (or) cobble substrates with low amounts of fine sediment and low amounts of attached filamentous algae
5. The presence of fish hosts with adequate living, foraging, and spawning areas
6. Few or no competitive or predatory nonnative species

Thus far ALDOT has not addressed post-construction stormwater impacts for any project, so far as we are aware. If that omission is continued into this project, the first four or five of those six items above will certainly be negatively affected by the construction and post-construction impacts of the Beltline and its indirect and cumulative impacts.

The Reevaluation Document indicates that the US Fish & Wildlife Service has concurred that none of the most recently listed species are likely to occur in the proposed path of the proposed Beltline and that coordination with the Service is ongoing. We request that coordination include an assessment of the potential impact of this project on Critical Habitat in the Cahaba River basin, as required by law. Again, there is significant new information about the affected environment that results in significant new impacts that were not considered in the FEIS. Prior environmental decisions are no longer valid, and a SEIS is required that includes an IE/CI.

Recognition of the Biological Significance of Southeastern Rivers and the Cahaba River.
The biological significance of southeastern rivers and the Cahaba River in particular have become more widely studied, known and acknowledged by the scientific and conservation community:

- In 1998, The Nature Conservancy and NatureServe published Rivers of Life[9]. That publication reported results of a scientific survey of watersheds and identified the Cahaba River as one of eight "Hot Spots" of freshwater biodiversity out of 2,111 watersheds in the continental United States.

[7] Federal Register: Vol. 69, No. 126, July 1, 2004, pp 40084-40171 (see p. 40145 for a map of Unit 13, Critical Habitat in the Cahaba River basin.
[8] Special Map 247; Critical Habitat Units for Threatened and Endangered Mussels in the Mobile Basin. P. O'Neil, S.W. McGregor, and E.A. Wynn. Geological Survey of Alabama and J. R. Powell of the U.S. Fish & Wildlife Service.
[9] Rivers of Life: Critical Watersheds for Protecting Freshwater Biodiversity. 1998. L.L. Master, S.R. Flack, and B.A. Stein, editors. A NatureServe Publication, 71 p. Available at www.natureserve.org/publications/riversOflife.jsp

- In 2002, the World Wildlife Fund published Tennessee, Cumberland and Mobile River Basins at Risk: A Biological Assessment and Vision for the World Wildlife Fund's Southeast Rivers and Streams Project, which identified southeastern U.S. streams as one of only 25 areas worldwide that are priorities for biodiversity protection[10].
- In 2007, the Sierra Club designated the Upper Cahaba River as one of "52 Most Important Places to Protect Within the Next 10 Years"[11].
- The 2004 designation as "Critical Habitat" by USF&W confirms the importance of the Cahaba River as essential for survival of imperiled aquatic wildlife[4].
- The 2007 edition of the National Geographic College Atlas of the World names Southeastern Rivers among 6 global examples of biodiversity, and specifically names the Cahaba River as significant, noting that it has more fish species per mile than any other river in North America.

The original FEIS does not take the global significance of the Cahaba's freshwater life into account. Again, there is significant new information about the affected environment that results in significant new impacts that were not considered in the 1997 FEIS. Prior environmental decisions are no longer valid, and a SEIS is required that includes an IE/CI to adequately identify potential impacts and evaluate alternatives to avoid or mitigate those impacts.

ADDITIONAL CONCERNS REGARDING INADEQUACIES OF OR INACCURACIES IN THE 1997 FEIS

Reconsider Route Change

EPA determined that the selected Beltline route was the most environmentally-damaging of all studied[12]. The selected Beltline route would cross at least five headwater tributaries to the Cahaba River. This may be an underestimate because the excavation footprint necessary for interchange ramps at Clay, AL may be larger than expected due to their proximity to steep hills. Downstream hydrological changes due are especially sensitive to culverting headwater tributaries because they occur where elevation changes are typically of greater magnitude than those found elsewhere in the watershed. Culverts, especially those that are not bottomless culverts, are usually designed to rapidly convey stormwater away from the interchange to avoid flooding and potential destruction of roadbeds. That very feature (increased velocity) that is essential from an engineering perspective, results in a significant departure from the normal hydrology to which downstream areas are physically adapted.

ALDOT has approved route shifts to avoid or reduce impacts to oil and gas wells, the Bayview Lake dam, Village Creek, Newfound Creek, superfund sites, roads, residences, a cemetery, lakes, Self Creek, even a potentially historic railroad trestle – yet the only shifts in the Cahaba watershed are minor ones to reduce residential impacts and earthwork. Despite requests from many members of the public, no shifts are proposed to protect the region's main drinking water source and a

[10] Tennessee, Cumberland and Mobile River Basins at Risk: A Biological Assessment and Vision for the World Wildlife Fund's Southeast Rivers and Streams Project.2002. M.M. Buckner, W. Smith, and J. Takats.52 p. Available at www.worldwildlife.org/what/wherewework/sers/WWFBinaryitem2738.pdf

[11] America's Wild Legacy. 2007. Available at www.sierraclub.org/52places

[12] Sept 8, 1997 letter to Mr. Jimmy Butts, ALDOT Director, from Heinz Mueller, Region 4 EPA NEPA Coordinator, regarding the Birmingham Northern Beltline Final Environmental Impact Statement.

global resource for biodiversity. The many alignment shifts, one of which is outside the original alignment and will require additional environmental study (I-459/59/20 – Mt. Olive Rd.), prove ALDOT is willing and able to do so. We recommend that ALDOT should study an alignment shift to avoid and minimize impacts to the Cahaba and tributaries as part of a SEIS, determining if improved alignment can reduce the number of Cahaba tributaries crossed by the Beltline, improve capability to use bridging, and reduce grading necessary to cross steep terrain. According to ALDOT's Preliminary Analysis for the Reevaluation, the SR 75 – I-59 portion of the project is not planned for ROW acquisition until 2025 and start of construction is not programmed. There is time for ALDOT to restudy the route.

Bridging versus Culverting the Cahaba River and its Tributaries

The maps available at the September 27th and 29th Public Hearings indicated a bridge over Old Springville Road in the City of Clay and another bridge to the west over a tributary to the Cahaba River. However, the ALDOT engineer at that station indicated that at present, the bridges shown on the map were tentative and the current plan was to culvert tributaries which *could* be culverted. The Preliminary Analysis for the Reevaluation document states that in the Cahaba watershed "only a small finger of the Cahaba River" would be bridged. Bridging is proposed for 23 streams along the Beltline route, including Village Creek, Newfound Creek, Crooked Creek, Self Creek, Five Mile Creek, Turkey Creek, Cunningham Creek, Short Creek and many of their tributaries. No bridge is currently proposed for the mainstem of the Cahaba River nor for its floodplain. The Cahaba River would be buried in a culvert.

Figure M: Floodplain Crossing at Unnamed Tributary to the Cahaba River on page 77 of the Reevaluation Document mislabels the Cahaba River mainstem as an "Unnamed Tributary to Cahaba River". The Cahaba River "mainstem" is recognized as the section upon which Lake in the Woods and Echo Lake are found. Visual inspection of each of the Cahaba River tributaries in Clay, Alabama clearly shows that where Goodner Mountain Road crosses the Cahaba, the flow is considerably greater than any other headwater branch or tributary. Moreover, the size (area) of the respective contributing watersheds is greatest for the branch crossed by Goodner Mountain Road. Also, the FEMA-designated floodplain is largest for the Cahaba River mainstem branch.

We have already described how culverting headwater tributaries may have particularly negative impact on downstream hydrological changes due to their tendency to increase the velocity of stormwater. There are additional negative biological and hydrological impacts generally associated with culverts. These include impeding connectivity of upstream and downstream fish populations (they present a barrier to movement), they prevent connection of surface waters to ground water, they exacerbate the volume and velocity of stormwater delivered downstream, and open culverts can contribute to elevated water temperatures during the summer months. Some, but not all of these factors, may be ameliorated to some degree through use of bottomless culverts.

We strongly recommend that the proposed Beltline bridge at least the FEMA-designated floodplains of the Cahaba River mainstem and the unnamed tributary that runs northeast to the Clay Ballparks. This would help protect the ecological integrity and functions of the Cahaba River watershed and the most significant drinking water supply for Birmingham.

We understand that ALDOT has consulted with the USF&W Service regarding the use of "bottomless" culverts. We endorse the preference for bottomless culverts where culverts are

unavoidable. However, there is no indication that ALDOT has made an effort to avoid culverting these headwater tributaries through routing changes, or through improved alignment of interchange ramps as they have demonstrated for the interchange near Self Creek in the Black Warrior basin.

Inaccuracies regarding Threatened and Endangered Species Surveys

The Reevaluation Document indicates that Alabama Snow-wreath, *Neviusia alabamensis*, is no longer listed as potentially existing in Jefferson County. That listing notwithstanding, Jefferson County has the highest number of remaining Snow-wreath of any county in Alabama. We suggest ALDOT consult with The Nature Conservancy regarding Snow-wreath in Jefferson County and that actual surveys be conducted for federally listed terrestrial species in the proposed path of the Beltline rather than relying on potentially outdated or misinformed lists.

Similarly, the presence of Leafy Prairie Clover, *Dalea foliosa*, should be assessed. It is known from Jefferson County, but its presence was not assessed in the 1997 FEIS.

In August of 2011, the Rush darter, *Ethostoma phytophilum*, was added to the endangered species list by the USF&W Service[13]. ALDOT should assess whether there are populations of this species that might be impacted. It is known to occur in an unnamed spring run of Beaver Creek and in Penny Springs, both found in the Turkey Creek drainage of the Black Warrior River.

Environmental Justice Analysis

The Environmental Justice (EJ) Analysis should include an assessment of the indirect impacts of Beltline-induced growth on minority and low income communities. For example, the EJ Analysis should examine which communities will benefit and which may experience economic losses if businesses relocate out of EJ communities to new development associated with the Beltline. This analysis should also examine which communities may bear increased tax burdens to pay for the additional infrastructure required at interchanges to allow for new development and increased drinking water costs due to impacts to the Birmingham Water Board's major raw water source. Lastly, an EJ Analysis should examine whether other alternative investments might have better EJ outcomes.

Wetland Mitigation Alternatives

The U.S. Army Corps of Engineers has recently approved a wetland mitigation bank within the Cahaba River basin. Since no approved mitigation banks were available at the time the FEIS was written, no mitigation in the Cahaba River basin was proposed by the EIS. We strongly recommend that wetland losses occurring in the Cahaba watershed be mitigated within the Cahaba watershed, not, as currently proposed, in the Black Warrior watershed.

BEST PRACTICES AND DESIGN RECOMMENDATIONS

Again, should the Beltline project move ahead, the Cahaba River Society wishes to serve as an expert resource, as we have in collaboration on many other major development projects, to help ensure the project is built using best practices that are as protective of the Cahaba River watershed

[13]Fed. Reg. Vol. 76, No. 153. August 9, 2011. Pp48722-48741.Endangered and Threatened Wildlife and Plants; Endangered Status for the Cumberland Darter, Rush Darter, Yellowcheek Darter, Chucky Madtom, and Laurel Dace.

as possible. Our specific recommendations, based on information about the Beltline that is currently available, are outlined below as a starting point for conversation.

- We ask that ALDOT acknowledge that post-construction stormwater impacts due to the proposed Beltline will occur and management of those impacts is an ALDOT responsibility under the MS4 NPDES permit requirements. CRS is eager to help identify ways that LID practices can be successful in Alabama highway projects.
- During construction in the Cahaba River headwaters, the stormwater management and construction approaches required by ALDOT and used by contractors must be far more rigorous than the stormwater management standards used in the past. CRS is interested in sharing "super BMP" practices that have been successfully used for large-scale construction projects near the River.
- "Super BMP" construction sediment and erosion control practices and fully-designed post-construction practices should be specified in detail in all bid documents to ensure adequate cost estimates are provided and that these essential protections are not underbid.
- We urge ALDOT and ADEM to consider all of their construction in the Cahaba River headwaters as "priority" sites for stormwater management, inspection, and enforcement.
- ALDOT should study rerouting the Beltline and employing a parkway design to avoid impacting multiple Cahaba tributaries, improve capability to use bridging, and reduce grading necessary to cross steep terrain.
- Should the route continue as is, ALDOT should redesign the interchange in the City of Clay to minimize alteration of Cahaba River headwater tributaries.
- Where culverts are unavoidable and are located outside FEMA-designated floodplains, bottomless culverts should be used.
- The Cahaba River mainstem and its FEMA-designated floodplain should be bridged.
- All FEMA-designated floodplains in the Cahaba River headwaters should be bridged.

CONCLUSION

Since the Beltline FEIS and ROD were finalized, there have been multiple significant changes to the project, to the Cahaba River, to generally accepted knowledge about the cumulative and indirect impacts on water resources of roadways and the growth induced by them, and to knowledge about the best practices that are necessary to mitigate those impacts. An Indirect and Cumulative Impacts Analysis is essential to adequately evaluate the impact of the Beltline on water resources, but one was not done for the FEIS. Due to these many changes, there are significant new environmental impacts that were not considered in the FEIS. This invalidates the prior environmental decisions, and a SEIS is required that includes an IE/CI analysis.

A sensible solution is for ALDOT to reconsider the route at the eastern end of the project and conduct an adequate SEIS.

Thank you for your thoughtful consideration of these comments. We are available to you for discussion of any of these comments in the spirit of achieving sustainable economic development for the communities along the proposed Beltline route while at the same time protecting the health of the Cahaba River and the drinking water supply for so many Birmingham area communities.

Sincerely,

Beth K. Stewart
Executive Director
Cahaba River Society

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