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SCIENCES

May 23, 2000

Ms. Gail Terzi and Mr. Jonathan Freedman
US Army Corps of Engineers
Regulatory Section, Seattle District
PO Box 3755
Seattle, WA 98124-2255

RE: Review of Wetlands Impacts Resulting from Construction of Temporary Interchange at SR509 and S. 176th Street.

Dear Ms. Terzi,

The Airport Communities Coalition (ACC) requested that I review the SR509 temporary interchange project associated with the construction of the third runway at Seattle Tacoma International Airport. The project is located in Burien, and construction will occur east and west adjacent to SR509, north of S. 176th street.

I am an environmental scientist and a professional wetland scientist (SWS certification number 001067). A package describing my background and experience is attached to this report. This letter presents my comments resulting from the review and specifically addresses the potential for impacts to Wetland 43 from the construction of the temporary interchange.

As detailed below, my conclusion is that construction of the temporary interchange will result in direct impacts to Wetland 43 from periodic discharges of sediment-laden stormwater from both expected and unexpected stormwater events. The disturbance resulting from these events to the wetland will have significant environmental consequences to wetland water quality, aquatic habitat and may be sufficient to alter the vegetation community further affecting wetland functions.

I reviewed the project plans (signed February 24, 2000) and hydraulic report (April 12, 2000) prepared by HNTB Corporation, and the wetlands reports prepared by Parametrix, Inc. including the *Wetland Delineation Report*, *Wetland Functional Assessment and Impact Analysis*, *Wetlands Re-Evaluation Document* (all dated August 1999) and the more recent Memorandum, dated May 3, 2000, regarding *Analysis of indirect impacts to wetlands from the temporary SR-509 interchange- Seattle Tacoma Airport*. I also visited the site on May 21, 2000 and observed conditions along the west side of SR509.

Correct Wetland Boundaries and Site Conditions Suggest Direct Discharges will Occur

There are two issues of consequence that should be carefully evaluated. First, there are inconsistent presentations of the wetland boundaries presented in different reports,

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which affect the accuracy of calculations of the actual distance between the construction zone and Wetland 43. The August 1999 wetlands documents show Wetland 43 as not yet field verified and provide a generalized boundary. The February 2000 plans and April 2000 hydraulic report prepared by HNTB show what appears to be a wetland delineation map, however the wetland boundary differs from the May 5th Parametrix memo. The HNTB plans and hydraulic report locate the wetland boundary west of what looks like a stormwater treatment structure beginning south of the culvert that carries the headwaters of Walker Creek from Wetland 44 to Wetland 43. The May 5th Parametrix memo shows the wetland boundary to be about 50 feet closer, beginning at the base of the old maintenance road (approx 12 feet wide) which lies at the bottom of the approximately 30 foot fill prism that is the roadbed for SR509.

Figure 1 shows the wetland boundary delineation (attached to the May 3rd Parametrix Memorandum) overlaid on the plan drawing TE-2 of temporary erosion and sediment controls. The figure shows that the stormwater facility is actually located in the wetland and the wetland boundary is located on the order of 50 feet closer to the construction zone than discussed in the reporting. Figure 1 also shows contours, which show that the wetland begins at the toe of the fill prism for SR509.

It is clear from the topography and the 1961 aerial photo provided in the May 5th Parametrix memo, that SR509 and the old access road were constructed through what was originally one wetland. The Parametrix report indicates that the stormwater facility shown on the plan drawings by HNTB as existing was constructed within the wetland. In addition, it is important to note that much of the wetland habitat located along the toe of the SR509 fill prism is open water, which is highly vulnerable to effects of sedimentary discharges and would also transport sediment to the Walker and Miller creek systems affecting downstream fish and wildlife resources.

Secondly, much of the construction site adjacent to Wetland 43 is located along a very steep slope (approximately 50 percent), which ends near the wetland boundary. From the shoulder of SR509 moving west in the area shown on Figure 1, there is an approximately 30 foot elevation drop over about 60 feet of lateral distance to an old vegetation encrusted asphalt access road about 12 feet wide. From there the grade drops about 6 feet at 50 percent slope to the boundary of Wetland 43. Figure 2 shows a 1998 aerial photo of the area with the May 5th wetland boundary overlaying the aerial. The photo clearly shows the steep mixed grass and shrub slope of the highway leading down to the linear feature of the old access road and the wetland boundary immediately adjacent. The dark line crossing SR509 between Wetland 43 and 44 shows the location of the culvert carrying the original drainage course that produced the wetland feature.

The proximity of the wetland to the construction zone in conjunction with the steep slope on which construction will occur means there will be direct impacts to Wetland 43 from sedimentary discharges due to rainfall events in conjunction with construction activities. Although temporary erosion control measures have been specified for the project, they will not prevent sedimentary discharges to Wetland 43 given the project site conditions.

In addition, it is not accepted professional practice to site stormwater facilities in a wetland due to the lack of adequate treatment that results under those conditions. It is

unclear from the reporting how the stormwater facility will be used. Since it is within the wetland boundaries, alterations to the wetland for purposes of stormwater management should be regulated.

Inadequate Protection is Provided to Prevent Sedimentary Discharges to Wetland 43

Sedimentary discharges occur primarily as a result of rainfall on unprotected soil and dusty surfaces. The movement of sediment across the landscape depends upon the landscape condition determined primarily by land cover and slope condition. In general the more vegetated the landscape the more sediment is slowed and captured before entering wetlands and streams and the flatter the landscape, the less likely sediment will travel significant distances. The poorest condition for preventing sedimentary discharges to wetlands is sparsely vegetated steep slopes, which are typical of the fill prism that is upland of Wetland 43.

Figure 3 shows results of a scientific review of several studies addressing what area is needed to protect different wetland functions. The first bar shows that discharge of sediment to a wetland requires a distance from the source of a minimum of 33 feet up to a maximum effective distance of 197 feet. Wetlands requiring only 33 feet between the sources of sediment for adequate protection are low quality wetlands with heavily vegetated buffers in flat or nearly flat terrain. Wetlands requiring a distance of 197 feet would be high quality wetlands in steep terrain with poorly vegetated land cover. Wetland 43 is a moderate to high quality wetland (Category 2) in steep terrain, at the base of a highway with a poorly vegetated upland (significant percentage of bare ground between plants). Based on the results of numerous scientific studies, sedimentary discharges to the wetland are probable, given the close proximity of the sediment source (as little as 40 feet in many areas) and the steepness of the upland construction zone.

Temporary erosion measures are planned and have been installed already on the site. Wattles have been placed parallel to the hillslope and a temporary silt fence has been installed at the base of the SR509 slope east of the old access road. These measures are severely inadequate to handle the volume of sediment that would be expected for the scale of this project. Moreover, the most significant discharges will occur from unexpected storm events. The general notes on the temporary erosion and sedimentation plan state that the requirements will be upgraded as needed for unexpected storm events, however this will not prevent direct impacts to Wetland 43 from unexpected storm events before upgrades to the system are made. That is the purpose for having an adequate buffer between a wetland and a construction project. The specified temporary erosion controls are not intended or designed to prevent sedimentary discharges, but to augment the protection afforded by an adequate buffer between the sediment source and wetland.

The corrected wetland boundary overlain on the aerial photo shown in Figure 2 illustrates that much of the wetland boundary lies between 120 and 130 feet from the centerline of SR509. Roadway Section D shown in the project plans illustrates the earthen wall that will hold the fill for the exit ramp to be about 80 feet from the edge of the wetland. That leaves an inadequate distance between Wetland 43 and the sediment source to protect the high value functions of the wetland.

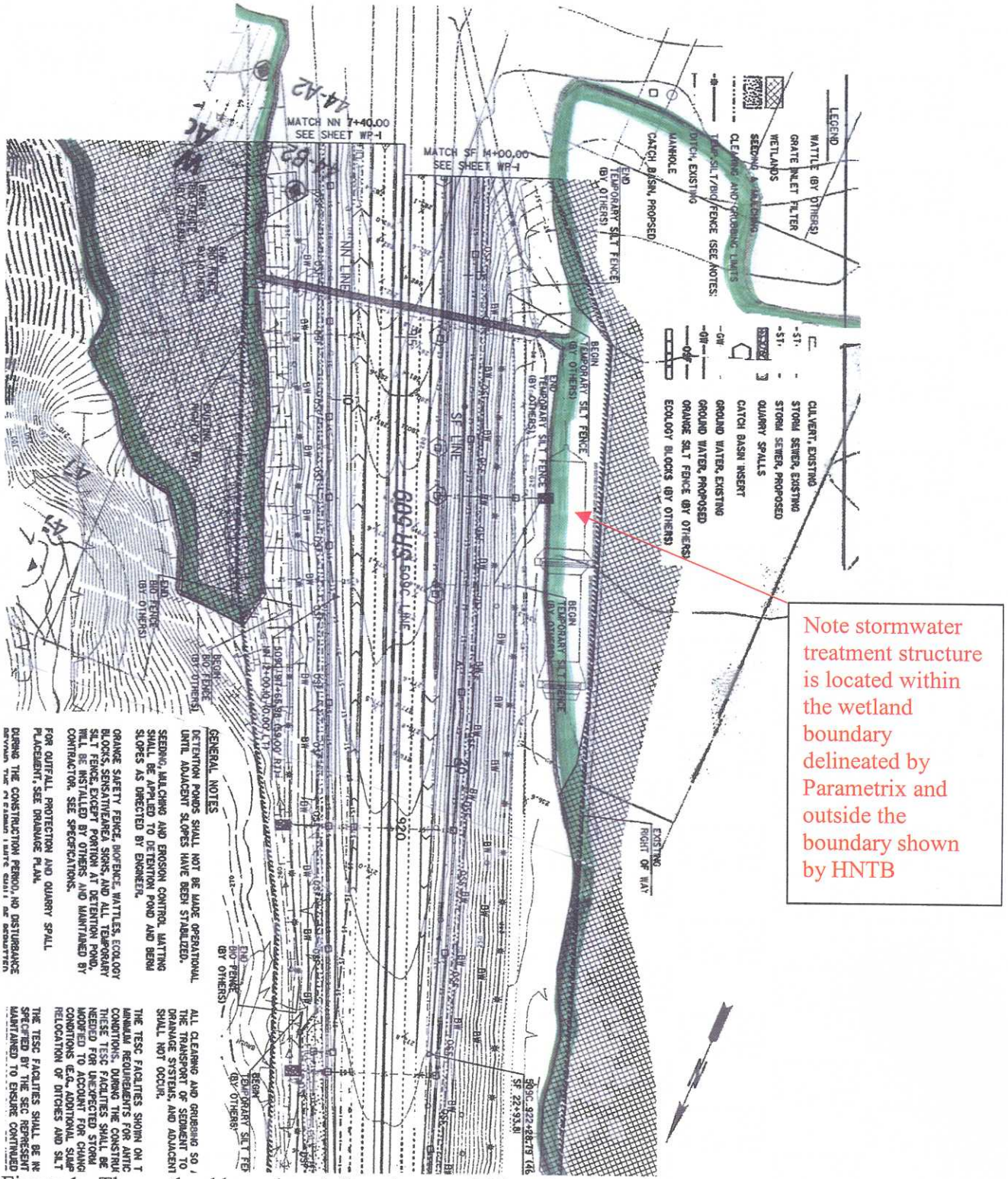

Figure 1. The wetland boundary delineation overlaid on the plan drawing TE-2 of temporary erosion and sediment control plan.

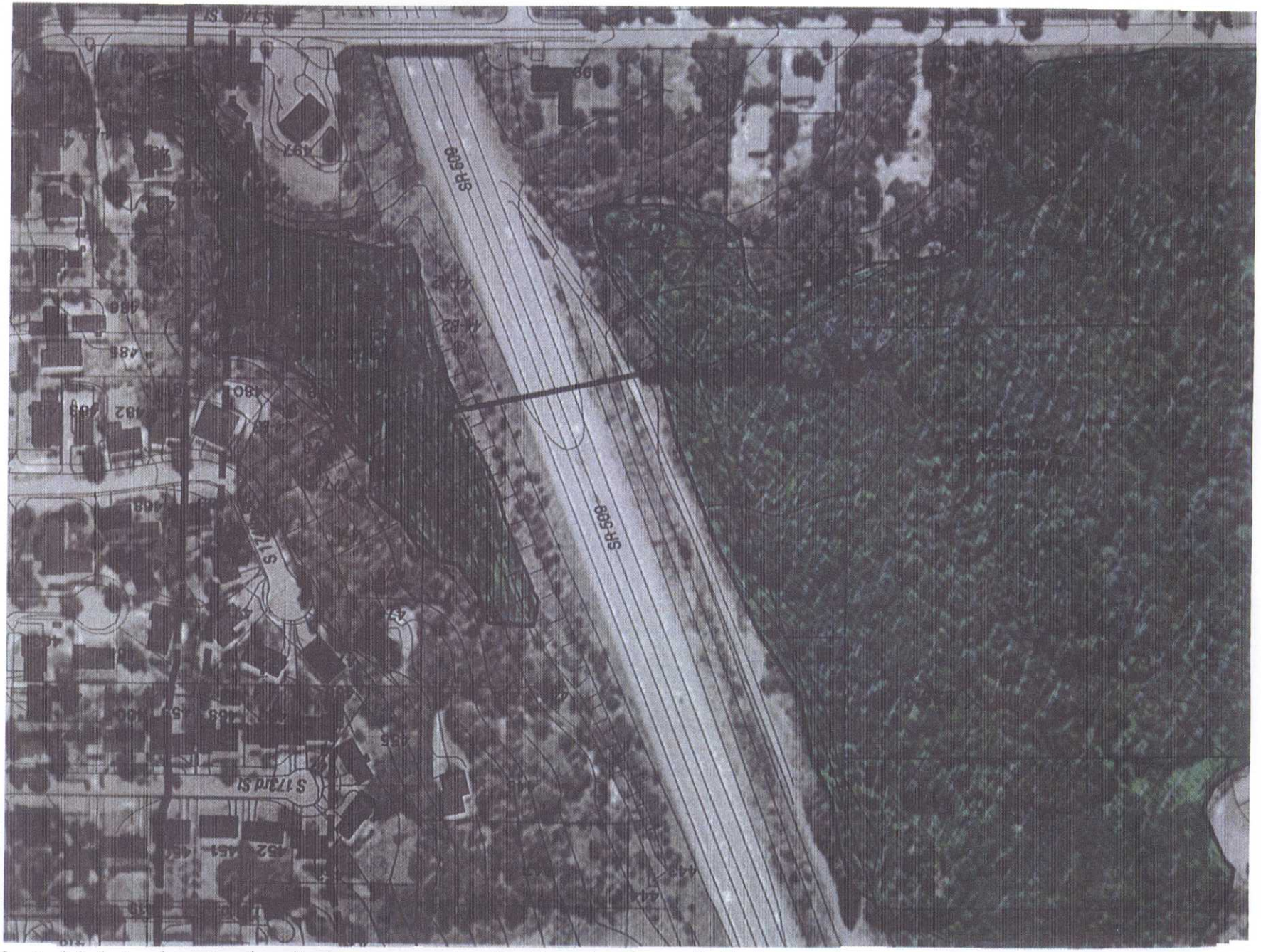

Figure 2. Aerial photo of construction site showing correct wetland boundary (green shading) in proximity to SR509. (Scale 1"=200 feet)

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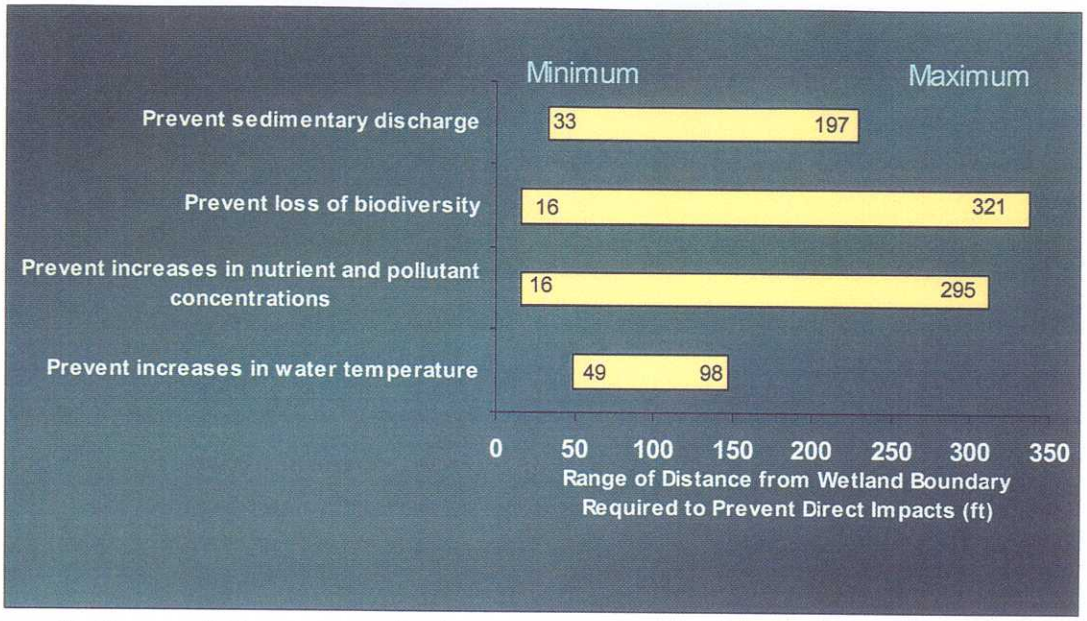

Figure 3. Range of distances required to prevent direct loss of wetland functions.[1]

Finally, the May 5th Parametrix report makes the argument that because the existing buffer is not functioning very highly no additional impacts will occur to Wetland 43 from the construction of the temporary interchange. This argument misconstrues the purpose of a buffer, which is to protect the associated sensitive area. In cases where buffers are considered inadequate, jurisdictions typically will require a larger distance between the activity and the wetland. It is not accepted practice to reduce the required buffer and ignore wetland protection functions when a buffer is determined to be poor quality habitat but to increase it so no wetland functions are lost.

Finally, I have reviewed the report by Cooke Scientific Services, Inc. regarding the project and concur with Dr. Cooke's concerns about the close proximity of Wetland 43, located to the east of SR509, and the interchange construction zones. These reductions in buffer area are verified in the Parametrix report. In summary, the project will directly impact Wetland 43 with periodic discharges of sediment-laden stormwater from both expected storms and from unexpected stormwater events. The disturbance resulting from these events to the wetland will have significant environmental consequences to wetland water quality, aquatic habitat and may be sufficient to alter the vegetation community further affecting wetland functions.

Thank-you for the opportunity to review this project and I appreciate your time spent reviewing this material. Please call me or email me if you have any questions or comments.

Sincerely,

Amanda Azous

Cc: Airport Communities Coalition (ACC)
Peter Eglick, Helsell Fetterman, LLP

[1] From Castelle, A. J. A. W. Johnson and C. Conolly, 1994, Wetland and Stream Buffer Size Requirements – A Review. Journal of Environmental Quality. Vol 23, No. 5, 878-882.