

November 18, 2007

To: Bob Lominska

From: Chad Voigt (Previous stormwater engineer)

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CITY MANAGERS OFFICE  
LAWRENCE, KS

Bob,

These are my thoughts on the proposed Airport Business Park, and North Lawrence development in general. The North Lawrence Drainage Study identifies huge flood control projects that will be needed if the watershed develops as shown in conceptual land use plans. Developers will not be able to pay for these projects, so the development potential of this land should be reevaluated. The City's Comprehensive Plan should be updated to minimize the need for flood control projects. Land uses should be downgraded to minimize runoff, preserve soils and reduce public expense.

The Airport Business Park would be a leap toward the conditions forecast in the North Lawrence Drainage Study. If the development proceeds, these are the points that need more in-depth review and discussion:

### **Code Requirements**

It seems there is a lack of understanding of the regulatory weight of the North Lawrence Drainage Study. All developments in the City are required (stormwater code and floodplain regulations) to provide studies and plans to prevent downstream stormwater impacts. For North Lawrence landowners, the scale of the floodplain and lack of viable management options mean that the required studies are beyond the resources of isolated developments. The North Lawrence Drainage Study, paid for by the public, gives developers the technical material needed to complete a valid development proposal. Developers can use the North Lawrence drainage Study, or provide an equivalent independent study. Either way, each development is required by code to prevent downstream impacts.

The North Lawrence Drainage Study identified \$16.2 million in reconstruction projects that are needed to provide a minimal level of service to existing residents. At an average of \$14,000 per acre, many of these projects will likely never be completed. (The City is still burdened with over \$40 million in stormwater projects needed elsewhere, at a cost of roughly \$6,000 per benefiting acre.)

The study also identified \$24.8 million in flood control projects that will be needed if the watershed develops as shown in conceptual land use plans. With this in mind, it's critical that new developments add to the solution rather than adding to the problem. New developments in North Lawrence should fully fund their internal drainage systems, as well as the additional projects needed to offset downstream impacts. Public funds should be directed at correcting existing drainage problems, and should not be directed at managing conditions created by new development.

The Airport Business Park proposal references the North Lawrence Drainage Study; however I could not find any discussion of downstream impacts or proposed flood control measures. In lieu of a discussion of actual impacts, the development should be expected to pay some share of the \$24.8 million grand total. Based on a proportion of the undeveloped watershed area, this development would need to contribute \$449,000. It appears that this amount would be lower if actual impacts are taken into account.

## **Maple Grove Drainage**

58 acres of the proposed business park currently drains to the Maple Grove drainage channel; which flows south to the City's pump station on 2<sup>nd</sup> Street. This system is already overloaded, and additional runoff would increase flooding of surrounding properties. The business park development proposes to minimize this impact by diverting developed runoff east to the airport property. This will require significant fill along the west edge of the development, and construction of a drainage system to deliver flow to the east.

This intent should be clearly identified on the preliminary plat, including easements and proposed pipe layouts. The development should fully fund the drainage system needed within the platted area. The development should also fully fund the system needed to divert runoff to the east, to an acceptable point of discharge on the airport property. If there will be any discharge of developed runoff to the west, this should be specifically quantified so that impacts to the south can be determined and addressed by the developer.

## **Tributary A Impacts**

Most of the proposed business park drains east to the airport, specifically to Tributary A which flows under Airport Road and East 1600 Road before flowing south under Highway 24/40 and Interstate 70. As with most North Lawrence drainage systems, Tributary A is very flat. Runoff from the business park development will increase the depth and duration of standing water adjacent to the airport runway. Further downstream, easements will eventually be needed where runoff increases standing water on existing farm land.

The North Lawrence Drainage Study identifies two bridge replacement needs on Tributary A, one at East 1600 Road and one at Highway 24/40. Flooding of East 1600 Road has been a concern in the past because it affects access to Grant School.

Based on land area, the proposed business park will generate 19% of the need for the \$477,000 bridge at E 1600 Rd, and 13% of the need for the \$326,000 culvert at Highway 24/40 (2005 cost estimates). The development should pay for its proportional share of these downstream improvements. If the business park is built prior to these improvements, the increased runoff will lead to more frequent flooding of both roads. The City should identify the intended schedule for completion of these projects.

## **Land Use Planning**

In addition to the high cost of managing the North Lawrence watershed, landowners and the City should recognize the cost of a future catastrophic river flood. The Corp of Engineers designed the Kansas River levee and reservoir system in the 1960's to control a specific major flood, with the explicit warning that larger floods will eventually occur. Eventually the river will top the levee, and the impacts in North Lawrence will be similar to the aftermath of the 1951 flood. The reservoir system was never fully completed, and climate change will likely increase the magnitude of possible flood events. These facts should be recognized in the decision to invest public or private funds in the area.

Native soils are an asset to landowners in North Lawrence. The sandy-loam, high-infiltration soils reduce runoff and relieve flooding. Covering these soils with impervious surface increases the volume of runoff more dramatically than in heavy upland soils. Building on these soils also permanently eliminates their agricultural value. The Eudora silt loam and Rossville silt loam soil units are both identified by the USDA as crop capability class 1, prime farmland. These factors are not considered in current land use plans. The City should plan for the conservation of these natural resources wherever possible.