



March 7, 2007

Village of Dexter
8140 Main Street
Dexter, MI 48130

Attn: Donna Dettling
Village Manager

Re: 1981 Annexation Area
Water and Sewer Information

Dear Donna:

On February 12, OHM provided costs estimates to provide water and sewer infrastructure to the area considered for annexation. The Village Council reviewed the information and deliberated on the annexation decision at the Council meeting on February 26, 2007 and tabled the decision until additional information could be considered. OHM was asked to provide follow-up on some questions raised by the Council regarding the potential to service the area with public water and sewer in the future. Below is a detailed summary of several items to which we were asked to respond.

1. The Council discussed how these potential improvements would be funded and was concerned with the magnitude of the cost demonstrated for a per-parcel Special Assessment. We were asked to discuss how the funding would be approached and what options might be available.

It is our understanding that the action of annexing the area does not require *immediate* extension of water and sanitary services to the area. Instead, the infrastructure would likely be installed when the property owners of the area petition the Village to extend the utilities. This would probably be driven by failure of wells or septic systems in the area, future environmental requirements in response to some pollution, or development of parcels within the area. While the Village could cause the improvements to happen without petition from the residents, this would typically happen in reaction to some concern to the public health, safety, or welfare.

Given the above, if environmental issues caused the need for the infrastructure, it is likely that the infrastructure extension might qualify the area for some funding through the state or federal government. If it was development that was prompting the need, specific negotiations with the development to bear the cost and consider some form of payback could be explored. Finally, if the residents petitioned the Village to cause the improvements to happen, it may or may not be for the entire area in question. A smaller group of the landowners could bring a petition forward and a smaller project(s) could be considered specific to the property owners' request.

In the end, after consideration of any loan or grant monies, private development funds, or other costs savings, it is likely that the remaining costs would be assessed to the properties that receive benefit from the improvement through the creation of a Special Assessment District (SAD). While it was previously demonstrated what the cost would be on a per parcel basis with 104 parcels within the annexation area, it has been our experience that when the "benefit" is considered, often the assessment is made on a per REU basis based on future land use. While we understand that the 20-year land use map developed for the SRF Project Plan is not a formal land

use map, if the number of REUs shown on that map for this area was considered (276 REUs), the cost per year for a 20-yr assessment period with a 6% interest rate would be as follows:

	Total Assessment per Parcel	Annual Assessment per Parcel*	Total Assessment per REU	Annual Assessment per REU*
Sanitary Sewer	\$55,673.00	\$4,370.34	\$20,978.00	\$1,646.79
Water Main	\$25,385.00	\$1,992.69	\$9,565.00	\$750.87
Total	\$81,058.00	\$6,363.03	\$30,543.00	\$2,397.66

*Annual Assessment based on 20-yr payback with 6% interest.

2. While this particular 1981 Annexation area needs to be considered on its own merits, we were asked to consider what impact the area south of the annexation area, which is also under consideration for annexation, might have on the infrastructure in the 1981 Annexation area. Given the topography of the area, sewer infrastructure to service the area to the south would likely pass through the annexation area and could likely utilize the same pumping facility.

There would be infrastructure common to both projects, which if considered and designed appropriately, would provide an overall cost savings. These considerations should be explored in detail at the time either project might proceed, as they definitely have impact on each other. The same may hold true for the water infrastructure, although that will depend on the results of the current search by the Village for additional water supply.

3. The Council inquired as to completing sanitary flow metering of the Baker Road Sanitary Trunk Sewer to confirm existing capacity. The actual wastewater flows through the sewer will be measured when the Village begins sanitary flow monitoring in mid-March that was planned as part of the development for the SRF Project Plan.

As part of the 2005 Capacity Analysis and the development of the I-Track tool, flows through the Baker Road Trunk Sewer have been approximated. They were estimated through distribution of calculated REUs for proposed and existing developments, and through a theoretical distribution of the actual measured wastewater flows at the wastewater treatment plant. These calculated and theoretical flows suggest that the Baker Road Sanitary Trunk Sewer is near capacity. If actual metering data suggest that more capacity exists, the Baker Road Sanitary Trunk Sewer could be considered as an outlet, but would not eliminate the need for a pump station.

4. For comparison purposes, we were asked to compare the estimates for this project with the previous project that extended utilities for the Dexter High School on Parker Road. While the school project was built in 2001 and included 3,300 feet of water main and 5,000 feet of sanitary sewer and the current project includes 18,000 feet of water main and 14,000 feet of sanitary sewer, we adjusted the costs of the school project for inflation and size to make a rough comparison, and found that this supported the current estimates for this area. The details are as follows.

For the sanitary sewer costs, the average bid price from the School Sanitary Extension project was used for comparison purposes. This price of 2001 dollars was converted to 2007 dollars based on an average 2.3% yearly inflation rate, as reported by the U.S. Department of Labor. The cost was then extrapolated from a 5,000 linear foot project to a 14,000 linear foot project. By adding in a 15% contingency and 25% engineering to the school project costs, this results in a comparative total cost of \$5.5 million, which is slightly lower than the projected \$5.8 million cost in the current estimate. It should be noted that the price for the school project did not include the cost of the pump station (as the pump station costs were incurred by the school), which is included in the 1981 Annexation area project at approximately \$400,000.

The same procedure was used to compare the water main costs between the 2001 school project and this current project. The 2001 dollars were converted to 2007 dollars, the magnitude of the project was extrapolated from 3,300 linear feet to 18,000 linear feet, and contingencies and engineering costs were taken into account. This resulted in a comparative cost of the school's water main project of \$3.4 million when compared to the \$2.6 million estimated for the current project.

5. OHM was asked if there was any knowledge of an 80/20 grant that the Village procured for the construction of the wastewater treatment plant in 1980. The plans for the wastewater treatment plant indicated an Environmental Protection Agency (EPA) project number C263261. After further research, specific information was not located. However, it is noted that in the late-70's, the USEPA was providing significant grants to communities with point-source pollution. Prior to the WWTP being constructed, the sewage was not adequately treated before outleting into the Huron River. It is suspected that the EPA grant provided funds to reduce this point-source pollution.

Because of the nature of the sanitary sewer and water main extension through the 1981 Annexation Agreement area, it is unlikely that this project would qualify for similar EPA funding if it were available. Currently, there is not any evidence suggesting that this area is having a significant negative impact on the water quality of Mill Creek. If a future environmental issue drives the need for the public sewer to be extended, it is likely that the project may qualify for some funding through the state or federal government.

6. As requested, the condition of the roads within the 1981 Annexation Agreement area was evaluated and whether they would need to be replaced in the next five years. Currently, the roads within the 1981 Annexation Agreement area are in decent shape with the exception of Baker Heights Court. Baker Heights Court could potentially be replaced in the next 5 years due to the condition of the roadway. Bent Tree Drive, Sandfield Ct, Boenaro Ct, and Millview Ct may need rehabilitation in 5 to 10 years. Portions of Shield Road and Parker Road could also be replaced in 5 to 10 years depending on maintenance of the roadways and the extent of commercial truck and school bus use. Finally, Baker Road, Shield Road adjacent to the school, and portions of Dexter-Chelsea Road would likely not need replacement for 10+ years.

Should the Village pursue the construction of sanitary sewer and water main throughout the 1981 Annexation Agreement area, some value engineering options could be considered. This includes using temporary sheeting in the areas of deep excavation to minimize roadway impact. The sheeting would be installed near the roadway to support the existing roadway while the sanitary sewer is constructed. Another option is relocating the sanitary sewer within easements outside the road right-of-way and influence of the pavement. While both these options will lead to additional costs in other areas (i.e. sheeting and easement purchases), the costs of reconstructing the roadways would be saved. These types of value engineering considerations would typically be performed at the time of a preliminary design and may provide some cost savings.

7. We were asked to evaluate whether or not any cost savings could be realized if the sanitary sewer were relocated so that it would run along Mill Creek, as opposed to some areas within the Shield Road and Bent Tree Drive rights-of-way, particularly considering that the impoundment behind the Mill Creek Dam is proposed to be removed. The sanitary sewer layout could be modified to extend behind Lot 70 and continue along Mill Creek. This could eliminate areas where the sanitary sewer in the Bent Tree Drive ROW was more than 25 feet deep, thus reducing the cost of the sewer and the impact to the roadway. Sanitary services for parcels labeled as 44, 45, 54-57, and 67-70 would be serviced through the rear yards. However, a pump station would still be required as there would not be sufficient grade to allow for a gravity sanitary sewer to reach the

wastewater treatment plant. With the above in mind, the savings for relocating the sanitary sewer, including contingencies and engineering costs, could amount to approximately \$300,000, excluding the costs of any necessary easements.

8. OHM reviewed the potential cost savings if the school's sanitary sewer system could be utilized as part of this project. Our understanding was that the 1999 Village/School Utility Agreement between the school district and the Village states that the force main is only for the school's use. If this agreement were revised, it is possible that the Village could use the existing force main that was installed by the school. The existing force main would have to be analyzed to verify that it has sufficient capacity for the parcels within the annexation area in addition to the school sanitary flows. Preliminary indications suggest that this capacity does not exist. Therefore, the two pump stations would have to be coordinated, so that they would operate on opposite cycles (i.e. the pumps do not operate at the same time). Only minimal savings are realized, as using the existing force main would only reduce the current estimate by approximately \$10,000.
9. Finally, we were asked to address a low-pressure sewer option to service these parcels. A low-pressure sanitary sewer involves each parcel having a grinder pump installed that will pump the sewage into a low-pressure force main. The grinder pumps continue to pump and push the sewage through the force main toward the outlet. A low-pressure sewer is generally less expensive to install than traditional gravity sewer, as the force mains are only 5 – 6 feet deep and can be installed using trenchless technologies. They also tend to have less infiltration into the system. However, a low-pressure system has higher maintenance costs with each home having their own grinder pump that would be maintained by either the Village or property owner. In addition, the cost to operate these pumps and the system as a whole is higher than a gravity system.

A low-pressure sanitary sewer option was not considered during the design after discussions with the Village that this type of system would not typically be considered. We could prepare a more detailed estimate of these installation costs, but would expect that it is significantly lower than the gravity sewer option. If this was to be considered, we would recommend that a life-cycle cost analysis be performed to include installation, operation, and maintenance costs.

We hope that the above information will assist the Council in their consideration of this issue. Should you have any additional comments and/or questions, please feel free to contact us.

Very Truly Yours,
Orchard, Hiltz & McCliment, Inc.

Christine A. Cale

Christine A. Cale, P.E.
Project Engineer