AGENDA

SPECIAL CITY COUNCIL MEETING

CITY OF SHELBY

February 13, 2017
6:30 P.M.

ROLL CALL OF MEMBERS

RESOLUTION NO. 1949

4TH CELL

ADJOURN

-OVER FOR MEETINGS-

CITY OF SHELBY MEETING SCHEDULE

February 13, 2017

6:30 p.m. **Special City Council Meeting**

7:30 p.m. **City-County Planning Board (CANCELED)**
(Mayor, Deputy City Clerk, City Planner, McDermott, Clark)

February 21, 2017 (due to Presidents' Day Holiday)

7:30 p.m. **Regular City Council Meeting**

February 27, 2017

6:30 p.m. **Park & Recreation Meeting**
(Mayor, Superintendent, Rec Director, Clark, Kimmet, Miller)

March 6, 2017

7:00 p.m. **Audit Committee**
(Mayor, Finance Officer, Moritz, Clark, McDermott)

7:30 p.m. **Regular City Council Meeting**

CITY COUNCIL PACKET LISTING

A. Agenda

B. Agenda Items

1. Resolution No. 1949 - Intent to Establish Storm Water Drainage System Charges
2. City of Shelby Wastewater & Storm Drain Documents
3. 1/26/17 Memorandum from KLJ re: Summary of Findings - DEQ Underground Storage Tank Program Groundwater Analysis
4. SK Geotechnical Boring Location Sketch & Boring Log

C. Correspondence

1.

Policy on Conduct and Manner of Addressing Council

The public is invited to speak on any item after recognition by the presiding officer.

1. Public comments will be accepted only on items within the jurisdiction of the City of Shelby.

2. Comments shall be limited to 5 minutes per meeting, unless such time is extended by a majority vote of the Council members.

3. While the Council is in session, those in attendance must preserve order and decorum. No member of the public shall delay or interrupt the Council proceedings; disturb any member who may be speaking; or refuse to obey the orders of the Council or its presiding officer.

4. Prepared statements are welcome and should be given to the Finance Officer prior to a Council meeting. Prepared statements that are also read, however, shall be deemed unduly repetitious. All prepared statements for public hearings shall become part of the hearing record.

5. All remarks shall be addressed to the Council as a body and not to any member of the Council or Staff.

6. Public members recognized by the presiding officer, shall:

    a. Stand, if able
    b. For the record, give his/her name and address
    c. If applicable, give the person, firm or organization he/she represents
    d. Limit comments to the matter of fact
    e. Address the Council as a body and not to any individual member of the Council or City Staff
    f. Ask no questions of individuals who are Council members, staff or other public members, except through the presiding officer
    g. Limit comments to a maximum of 5 minutes, unless such time is extended by a majority vote of Council members.

The Council thanks public members for respectfully and courteously providing constructive and valuable information.

RESOLUTION NO. 1949

CERTIFICATE AS TO RESOLUTION AND ADOPTING VOTE

I, the undersigned, being the duly qualified and acting recording officer of the City of Shelby, Montana (the "City"), hereby certify that the attached resolution is a true copy of a Resolution entitled: "RESOLUTION OF INTENTION OF THE CITY OF SHELBY, MONTANA TO ESTABLISH A BASIS ON WHICH STORM WATER DRAINAGE SYSTEM CHARGES ARE DETERMINED AND CHARGED AND PROPOSING RATES AND CHARGES" (the "Resolution"), on file in the original records of the City in my legal custody; that the Resolution was duly adopted by the City Council of the City at a meeting on January 17, 2017, and that the meeting was duly held by the City Council and was attended throughout by a quorum, pursuant to call and notice of such meeting given as required by law; and that the Resolution has not as of the date hereof been amended or repealed.

I further certify that, upon vote being taken on the Resolution at said meeting, the following Council Members voted in favor thereof: _____ _____; voted against the same: _____ _____; abstained from voting thereon: _____ _____; or were absent: _____ _____.

WITNESS my hand officially this 17th day of January, 2017.

_____
Jade Goroski, Finance Officer

RESOLUTION NO. 1949

RESOLUTION OF INTENTION OF THE CITY OF SHELBY, MONTANA TO ESTABLISH A BASIS ON WHICH STORM WATER DRAINAGE SYSTEM CHARGES ARE DETERMINED AND CHARGED AND PROPOSING RATES AND CHARGES

RECITALS

WHEREAS, the City of Shelby, Montana (the "City") presently owns and operates a sanitary sewer system for the collection and disposal of sewerage (the "Sanitary Sewer System") and into which storm and other surface waters are being discharged; and

WHEREAS, a piecemeal and undersized storm water drainage network (the "Existing Storm Water Drainage Improvements") has been assembled that directs surface and storm water into the Sanitary Sewer System; and

WHEREAS, the Sanitary Sewer System also takes on storm water that seeps underground and infiltrates pipes and conduits; and

WHEREAS, the surface and storm water entering the Sanitary Sewer System is reducing the life expectancy of and the capacity of the sanitary treatment plant to treat wastewater; and

WHEREAS, the City has been forced to place a moratorium on future subdivisions and connections to the Sanitary Sewer System because of the treatment issues caused, at least in part, by surface and storm water; and

WHEREAS, because of the inadequacy of the Existing Storm Water Drainage Improvements, water events cause property damage and health concerns and interrupt and complicate the affairs of persons in the City; and

WHEREAS, accordingly the City has determined that it is necessary and desirable to establish a separate and distinct storm water drainage system and rules and regulations relating to storm water and drainage and construct improvements for the collection and disposal of storm and surface waters separate and distinct from the Sanitary Sewer System; and

WHEREAS, the City passed Ordinance No. 827 on August 22, 2016 which established the storm water drainage system and set forth regulations for the storm water system; and

WHEREAS, the City has not established rates to fund contemplated new constructions and improvements; and

WHEREAS, until the new storm water drainage system is constructed and placed in service, the City will continue operating, performing work on, and improving the Existing Storm Water Drainage Improvements, including, without limitation, by flushing out sedimentation and debris with sewer jets; and

WHEREAS, pursuant to Montana Code Annotated, Title 7, Chapter 7, Parts 42 and 43, and Title 7, Chapter 7, Part 44, M.C.A., the City is authorized to construct, better, improve and extend a storm water drainage system and issue revenue bonds to finance in whole or part the costs thereof; and

WHEREAS, the City Council (the "Council") of the City is further authorized and required by Title 7, Chapter 13, Parts 42 and 43, Title 7, Chapter 7, Part 44, and Title 69, Chapter 7, Part 1, M.C.A., to establish just and equitable rates, fees and charges and rentals for the services and facilities provided by a storm and surface water drainage system so as to make a storm water drainage system self-supporting; and

WHEREAS, the City has committed to establishing a separate and distinct storm and surface water drainage system that will initially consist of the Existing Storm Water Drainage Improvements, which will, to the extent practicable, ultimately be incorporated into and form a part of the new and expansive storm and surface water drainage system (the "System"), owned and operated by the City; and

WHEREAS, the City is contemplating issuing storm water drainage system revenue bonds in the amount of approximately $3,850,000 (the "Bonds") to fund improvements to the System, to establish appropriate reserves, and to pay the costs associated with the issuance of the Bonds; and

WHEREAS, it is necessary to collect sufficient revenues to repay the Bonds, pay costs associated with the operation and maintenance of the System, and establish appropriate reserves; and

WHEREAS, under Section 69-7-101, Montana Code Annotated, the City has the power and authority to regulate, establish, and change, as it considers proper, rates, charges, and classifications imposed for utility services to its inhabitants and other persons served by the municipal systems. Rates, charges, and classifications must be reasonable and just.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City as follows:

Section 1. Intent to Adopt Resolution Establishing Rates and Charges. It is the intent of the City to adopt following a public hearing a resolution which will set forth rules and regulations that will establish the basis upon which charges for the establishment, use and availability of the System will be imposed by the City. The City is simultaneously proceeding with the enactment of an ordinance setting forth, among other things, rules and regulations regarding the System. The proposed rates and charges, if approved, will not go into effect until after the effective date of the ordinance.

Section 2. Proposed Rates and Charges.

2.1. Storm Water Drainage Charge. To pay the costs of operating and maintaining the new System and to finance or reimburse the City for costs of designing, constructing, operating, and maintaining the new System and to establish necessary or appropriate reserves, effective as of the earlier of the date of substantial completion of the new System or the August 2017 billing,

the City proposes to charge all Properties the subsequent Storm Water Drainage Charge, determined as follows:

Property Type	Subsequent Storm Water Drainage Charge Per Property[1]
Non-Residential Metered Property	$95.00/year per ERU (1 ERU = 3000 sq. ft. impervious area)
Residential Metered Property	$95.00/year
Non-Metered Property	$0.0025/sq. ft. per year capped at $625.00 per parcel

[1]Billed as described in Section 3 below.

If the initial and subsequent Storm Water Drainage charges are approved after a public hearing, no additional proceedings will be required for the subsequent Storm Water Drainage Charge to come into effect.

Section 3. Billing. The City proposes to charge owners of Properties that receive a monthly water and/or sewer bill (i.e., a metered Property) for the Storm Water Drainage Charge by including with such bill the applicable Storm Water Drainage Charge. For Properties that are not connected to the municipal water or sewer system and that therefore do not receive a water or sewer bill (i.e., a Non-Metered Property), for administrative convenience only, the Storm Water Drainage Charge would be placed on the property tax statements applicable to such Properties. The amount of such charge would equal each year the dollar amount determined by multiplying $0.0025 (.0025 cents) by the square footage of such Property for the subsequent Storm Water Drainage Charge, and approximately one-half of such amount would be due with the November 30 property tax payments and approximately one-half of such amount would be due with the May 31 property tax payments.

Section 4. Late Charges. The City contemplates imposing a reasonable, just, and appropriate late fee following the approval of the Storm Water Drainage Charge by adjusting its late fee currently applicable to other of its municipal utilities.

Section 5. Amount of Increase. The proposed monthly flat rate for metered Properties and the Non-Metered Property charge are new charges in conjunction with segregating the Existing Storm Water Drainage Improvements as the initial part of the System and establishing and constructing the new System. Accordingly, all of the Storm Water Drainage Charge would be an increase over current utility bills, recognizing that in the absence of the new System, rates and charges relating to the Sanitary Sewer System would need to be increased to deal with the deleterious effects that storm and surface waters are having on the Sanitary Sewer System.

Section 6. Determination of Annual Budget for System. Each year the Council of the City shall determine the amount of money needed to pay the costs of the System including but not limited to: (a) the payment of the reasonable expense of operation and maintenance of the

System; (b) administration of the System; (c) the payment of principal and interest on any bonded or other indebtedness of the System; and (d) the establishment or maintenance of any required reserves, including reserves needed for expenditures for depreciation and replacement of facilities, as may be determined necessary from time to time by the Council or as covenanted in the ordinance or resolution authorizing any outstanding bonds of the System. Based on the annual needs of the System, the Council will establish monthly or semi-annual rates and charges for the use or availability of the System.

Section 7. Further Rate Increases. Subsequent adjustments to the Storm Water Drainage Charge or adoption of a new charge may be made by resolution of the Council duly adopted after a public hearing with notice thereof given as provided by law. The subsequent Storm Water Drainage Charge would be implemented by the proceedings contemplated by this resolution, and, as such, would not be an adjustment, but would come into effect of its own accord as contemplated by this resolution.

Section 8. Public Hearing. A public hearing on the establishment of the proposed rates and charges for the System will be held on _____, 2017, commencing at 7:30 p.m. at the City Hall, 112 1st Street South, Shelby, Montana.

Section 9. Notice. The City Finance Officer is hereby authorized and directed to publish or cause to be published a copy of a notice of the passage of this resolution in *The Shelby Promoter*, a newspaper of general circulation in the City, on _____, _____, and 2017, and to mail or cause to be mailed a copy of said notice to all persons who own property in the City and to all customers of the System, including owners of Non-Metered Properties, at least 7 days and not more than 30 days prior to the public hearing. The mailed notice must contain an estimate of the amount that the customer's average bill will increase. The City Finance Officer is also authorized and directed to mail by first class, postage prepaid, notice the public hearing to the Montana consumer counsel.

Passed and approved this 17th day of January, 2017.

_____
Larry J. Bonderud, Mayor

ATTEST:

_____
Jade Goroski, Finance Officer

Gary McDermott

From: Lyle Meeks <lylem@nciengineering.com>
Sent: Tuesday, January 31, 2017 4:00 PM
To: Gary McDermott
Cc: 'Jake Neil NCI'
Subject: synopsis of major issues: w/in 2 years

1. Is the sewer project needed immediately? The PER indicates few minor permit violations, maybe because of the sandbags. I don't know. Why were the sand bags placed? In manholes + emergency overflow
2. Liner. Existing 3 cells are not lined. They probably leak. DEQ may want this fixed up front. no KLJ says the cost to line 3 existing cells is in the 5 year plan, when the 5th cell is added. I can't get the quantities and costs to match up, and expect the $1.25 per foot cost to increase by 2022. attempt to delay
3. If we have to line the existing cells, can we deepen them and avoid cost of 5th cell to obtain our storage volume? operational issue - maybe w/ 4th
4. UV disinfection. This is supposedly needed now to meet e-coli limits in the winter, although there have been no violations noted. When they go to spray irrigation they can plant alfalfa and eliminate the cost of UV. I wonder if they really need UV at this time. Ask the engineer and DEQ. Yes UV now w/ 4th cell.
5. There is no connection between the storm drain and sewer projects presented or documented. The town may wish to perform a real I/I study and determine if they can spend money on storm improvements that might mitigate hydraulic capacity problems in the wastewater ponds. Otherwise, the storm imprebements may be justified from a property flooding standpoint, but what does that flooding cost the city, and what return is there on that investment? Maybe the City can spend $1 million in storm drain improvements to remove "combined sewers" which is may come from roof leaders, parking lot storm inlets tied to the sanitary, sewer manholes in the bottom of drainage ditches, etc., and reduce hydraulic loading on the sewer lagoon system. This needs further investigation. Yes

Call me on my cell 781-9154 for further discussion as needed.

Gary McDermott

From: Lyle Meeks <lylem@nciengineering.com>
Sent: Tuesday, January 31, 2017 3:25 PM
To: Gary McDermott
Cc: 'Jake Neil NCI'
Subject: shelby report
Attachments: summary report 1-27-17.doc

Gary,
I have perhaps more questions and comments. I do think Shelby will need to spend some money on storm drain and sewer improvements, and I think it is a good idea to revisit a couple areas of the proposals as suggested in the tail end of the report.

I will be out of the office the remainder of this week, but will have my cell phone with me. Call me at (406) 781-9154 if you have any questions! Jake Neil and I have had several discussions and he may be more available than I to talk to you. I will be in meetings or on an airplane for much of those three days.

Lyle

NCI Engineering

Memorandum

TO: Gary McDermott

FROM: Lyle Meeks, P.E.

DATE: 27 January 2017

RE: City of Shelby Wastewater and Storm Drain Planning Document review comments.

Per your request we have reviewed the following documents:

- City of Shelby Wastewater Preliminary Engineering Report dated April 2014
- City of Shelby Storm water Preliminary Engineering Report dated May 2012
- City of Shelby Storm water Inflow Analyses dated 11 Feb. 2015
- Proposed Resolution No. 1949 dated 17 January 2017

In the review process we asked you a number of questions which were passed on to the Mayor. Pertinent questions and comments are summarized in this memo.

WASTEWATER SYSTEM PER SUMMARY AND COMMENTS.

Collection System.

The PER indicates no problems with the piping or collection system other than an undersized pipe from the prison to a 24 inch trunk main. There is no mention of Infiltration or inflow and the focus of the PER was on wastewater treatment. This is not unusual if there are no perceived problems in the piping system. Given the fact that the collection (piping) system was apparently mostly replaced or slip-lined in 2009, this is reasonable.

Treatment System.

The PER indicates the existing 3 cell lagoon system is hydraulically overloaded due to population growth, and that treatment expansion is needed for future community growth. The lagoons are undersized by today's design standards, but the violation history is very minimal. **The PER states the lagoon system typically only discharges from May through December.** The reason for this is apparently the inability of the system to meet e-coli permit limitations in the winter months. I did not review all discharge permit conditions, but there is concern that the hydraulic capacity problem jeopardizes effluent quality and jeopardizes permit compliance.

Shelby has had perhaps 5 discharge permit violations since 2007. These were attributed to pond turnover in the spring. The assessment in Chapter 3 says the treatment system is working well.

The PER does not indicate the lagoon system became "suddenly overloaded" if such is the case. I did not see a record of discharges that might correlate flows to population by year. The PER indicates the problem as being a population growth problem, but the town has shrunk is size since 1960. The PER indicates the average annual wastewater production is 92 gallons per person per day. This is considered below average. The question then raised was: Why is Shelby doing a project at all? The argument can be made that the town is being proactive in terms of accommodating future growth. It is possible the system has been hydraulically undersized for many years, or that the advent of the prison changed flows. The PER does not delve into this issue.

Yes sand bagging allowed

Design Criteria / Freeboard issues

You were told at a December council meeting that sandbagging of the lagoon outlet structures has occurred, perhaps since 1993. This was likely done to increase residence time to meet discharge permit conditions. You heard the sandbagging was done each year sometime around early February thru the end of March or early April. You indicated the Engineer may not have been aware of sandbagging. True

Per KLJ messages to the Mayor and passed on to you, approximate freeboard from the concrete platforms inside of the manholes on top of where the sandbags were likely placed to the top of the lagoon dikes is between 2.23 and 2.47 feet. It appears that the structures were designed for the boards to be installed up to about 1/2 foot below the top of the concrete platform to still meet the 3' freeboard requirement. Sandbagging the gates between the lagoons effectively raised the effluent in each lagoon by 6 to 9 inches, reducing the freeboard in the cells to 2.27 to 2.45 feet in lieu of the DEQ requirement of 3 feet.

There is no reference to sandbagging of the lagoon outlets to raise pond levels in the PER. not reported

In your communication with the Mayor as passed on to me, the City notified the DEQ that sandbagging had occurred whereupon DEQ wrote back and said that was a violation and not to do it in the future. The mayor then told the Council that this spring you will have numerous violations and will be paying large fines for each violation. In addition, all new sewer hookups have been discontinued.

Your questioning of the Mayor indicates the cells vary in depth from one end to the other. The mayor was concerned that the increased depth increases the pressures above the design limits so a cell could breech, and they would likely breech before overflowing if sand bagging continued. I respectfully disagree that an increase in depth of 6 to 9 inches increases hydraulic pressure that might cause dike failure. The purpose of freeboard is to guard against wave action and overtopping that might cause erosion on the outside of the dike. Rip rap is typically installed to guard against interior erosion due to wave action. Hydraulic pressures are not a consideration in dike design. Because the dikes have not overtopped in apparently 23 years of sandbagging, it seems unlikely such will occur in the near future. I do understand there is evidence of cell wall leakage, which is more related to a liner issue than anything. See my liner discussion later in this report. The freeboard issue is really one of adherence to DEQ design criteria. With sandbags, you do not meet modern DEQ design criteria that did not exist in 1959 when the cells were constructed. There are other key design criteria your lagoons do not meet as well, notably that of lining.

The requirement for 3 feet of freeboard may not have existed in 1959. It would apply now to new or reconstruction or rehabilitation projects. The Mayor reported that if overtopping occurs, DEQ indicates "the 3 certified city of Shelby operators would have federal charges filed on them and the department would seek jail time". This runs very contrary to my 40 years of experience with DEQ Permitting and Compliance and Enforcement folks. As I understand this situation they have not initiated a Notice of Violation or other enforcement action. Verbal to City Supt.

I understand the lagoons have never breached but the lack of liner (not so much a decrease in freeboard) may have caused some seeping in the South wall of the third cell. The Mayor apparently indicated to you, and I concur, that there is minimal danger of breaching. The issue may be lack of residence time without sandbags, resulting in violation of your permit. **The PER indicates you generally discharge for 8 months a year. I wonder if this discharge period could be extended to 9 months and solve the problem? Has this been attempted, and with what results?**

My experience with DEQ is that they may unlikely to make Shelby correct a design criteria problem unless there is a history of discharge violations or a concern for safety. I rely now on "hearsay" regarding how long the sand bags in place, why did flows into the lagoons increase to create the need for the sandbags, and were there increases in BOD and TSS to create the need for sandbags? **I strongly recommend that the city engage DEQ with a plea to allow operation in this fashion, if the City does not wish to take on the expense of this project immediately due to other fiscal concerns.**

Liner issues

The proposed lagoon project has a $1.0 million liner price tag for the 4th cell. The PER does not address as-built conditions, but in 1959 synthetic liners did not exist and the existing three cells are most likely lined with bentonite clay, which historically leaks. This typically brings leakage into question.

Typically, if wastewater treatment upgrades are proposed, DEQ requires upgrades to the entire treatment works to new design standards. DEQ is likely to require some "proof" that the existing 3 cells do not leak, while there is apparent evidence that this is the case (through one cell wall). They may require a leakage test for the three existing cells, which from experience is practically impossible to do. They may require installation of monitoring wells and a look at possible mounding of groundwater in the area, and may want water quality samples from the wells. It is perhaps more probable than possible they will require lining of the 3 existing cells with a synthetic liner. The three existing cells total about 51 acres in size or 2.2 million square feet. At $2 per foot plus rip rap, new control structures, and contingencies, this cost could add up to an additional $5,000,000 over the current projected project cost. This is a very rough number but a big enough number to warrant very detailed discussion and agreement with DEQ.

In the discussion of the spray irrigation alternative, there is a recommendation to line the existing cells. I do not see 2.2 million square feet of liner in the estimate, and **recommend engagement with the Engineer and DEQ regarding the schedule and cost for lining of the existing cells.**

Sludge Issues

The PER does not include costs for sludge removal. I saw reference somewhere to the primary cell being dredged, which would indicate that sludge removal has occurred. I wonder what method was used and how this impacted the bottom seal of the lagoon. Sludge removal costs seem like a "wild card" and there is no discussion of such, other than an "allowance" in the cost estimates.

done by mud water

If liner placement or other work on the first three cells occurs, current standard of the industry is to measure sludge volumes in the lagoons. This volume may make a difference in permit violation / residence time / "freeboard" issues. The standard of the industry is to 'sludge judge" or measure sludge depths. Sludge removal can become a major cost component in lagoon rehabilitation projects.

I recommend a more detailed analyses of existing sludge volumes, particularly if existing cell lining is an issue.

UV Disinfection Issues:

UV disinfection is recommended in the PER to meet short term bacteriological limits. In the long run, if spray irrigation is the selected alternative, UV disinfection would only be required on primary food crops used for human consumption. If alfalfa or other 'secondary" crop is irrigated, disinfection is typically not required. The irrigation site depicted appears to be dryland wheat. I wonder if UV installation now would result in ability to operate in the winter months, essentially freeing up storage capacity and perhaps relieving the hydraulic loading concerns. I don't know enough about system operation, but it seems worthwhile to ask your engineer to investigate.

Treatment Technology Issues

Reference is made in the PER to "future ammonia limits" as a consideration in wastewater treatment. As stated, DEQ in 2019 may decide to impose nutrient limits on your discharge, a higher standard of treatment will be required to meet permit limitations. Many small cities and towns have found spray irrigation of the effluent (with no discharge permit) to be more attractive than intense biological nutrient removal (BNR). In the case of Shelby, it is possible that you could spend money on UV disinfection that may not be needed in the long term. I recommend more detailed engagement with DEQ and hopefully some assurance that you can get a discharge waiver for ammonia and other nutrients. DEQ will probably not commit, and may want to force ammonia limits and additional treatment.

We are designing spray irrigation projects in Fairfield and Belt now. The Engineer might consider deepening the existing cells to add storage. And, the biggest question is if the town wants to bite off this cost in light of what may be a lack of urgency.

Cut Bank is getting ready to bid a $16 million BNR plant that will have much higher O & M cost than spray irrigation, and it does not let them off the hook for future discharge permit changes. You might ask your engineer to take a rough look at BNR (Biological Nutrient Removal) plant, but the life cycle cost is probably daunting.

STORM WATER INFLOW ANALYSES SUMMARY AND COMMMENTS

There was most likely a history of groundwater infiltration into the sewer system that was probably identified in earlier (2007 or 2008 engineering reports), resulting in fairly massive wastewater collection system replacement and rehabilitation project in 2009. The Wastewater PER indicates no wastewater collection system issues related to Infiltration / Inflow (I/).

The storm water inflow analyses dated Feb. 2015 is very brief. One open channel flow meter was installed in the lowest sanitary manhole on the system, and storm flows were correlated to storm and snow melt events for a year. From the single graph provided in the 6 page "inflow study" there was evidence of elevated groundwater levels from mid- March through mid-July in 2014 to the tune of about 10..000 or 20,000 gallons per day. I don't know if that period is representative of every year in Shelby. There are no wastewater permit violations associated with this time period, so it seems that high groundwater may not have much effect on wastewater treatment performance. The annual average per capita wastewater production rates are below recommended DEQ design standards.

From the looks of that single graph, "inflow" or rapidly changing flows in the sewer, causes dramatic increases in wastewater flow during snow melt and rain events. One storm in June of 2015 apparently contributed 2,173,300 gallons of storm water to the lagoons. These flows may include roof drains and maybe some parking lot drains connected to the sanitary sewer ("combined sewers") in addition to sump pumps.

The City apparently installed a sump pump meter in their main street building that apparently recorded approximately 1300 to 1400 gallons of water in 3 fairly recent weeks. The Mayor apparently feels building next door generates a large volume of ground water, but the owner won't let them meter.

700 per CCA

The Wastewater PER indicates average annual per capita daily wastewater flow of 92 gallons per person per day. This is actually below the recommended design value recommended by DEQ of 100 gallons per person per day. So, in the grand scheme of things it does not appear that I/I is excessive. At the same time, the wastewater treatment system is hydraulically overburdened, per the wastewater PER.

No dye tests of suspected roof leaders or parking lot inlets was completed.

Apparently, KLJ has been directed to perform additional work. My understanding is they will look into the sources and quantity of ground water flowing into the wastewater system via sump measurements. I understand the Mayor believes surface water does not flow into the waste water system, and believes the increased flow into the lagoons occurs over a couple of days after the precipitation event and is a result of the ground water flow increasing and the sump pumps pumping more water into the waste water system.

I understand via your conversations with the mayor that he didn't think there was any significant infiltration since the collection system work was completed.

From a practical standpoint, it is very difficult for most communities to force private parties to separate their sump pumps from the sanitary sewer. Ideally, these sump pumps should discharge to the ground surface on the outside of the building, and very few do that. It is easier for many communities to force separation of roof drains from the sanitary system.

At this point the inflow analyses was so cursory that no one knows the source of inflows into the sanitary sewer system. Therefore, it is not possible to consider extensions of storm drain piping (perhaps concurrently with other storm improvements) to counteract the effects of storm water on the sewer treatment system capacity.

See further discussion below relative to the relationship of storm and sanitary flows.

STORM WATER PER SUMMARY AND COMMENTS

The Storm Water PER references several sections of severely undersized storm water piping. The City is separated into drainage basins and pipe sizes are compared to that size required for DEQ mandated design storms. In several basins (notable S2, S3, S4 and N2 there are areas where insufficient pipe size contributes to localized flooding. It seems obvious given the flooding history that there is a need to upgrade and extend segments of the storm drain piping system.

No reference is made to potential impacts of storm water on the sanitary sewer system. No open channel flow meters were installed to calibrate the storm model.

KEY RELATIONSHIP BETWEEN STORM AND SANITARY FLOWS.

There is one graph in the 6 page long inflow study that is printed to such a scale it is difficult to ascertain the source of I/I. It is obvious there is an infiltration element, evidenced by seasonally high wastewater flows (and seasonally high groundwater) in the rainy months. We have seen occasions when slip lining the main lines removes the "path" for groundwater to dissipate, resulting in a raising of the groundwater table and moving the infiltration problem to service lines and foundation drains. So, the source of groundwater just moves up hill a bit. I do not know enough about the duration of the huge spikes after storm events, but if they prolong for days after it is most likely a foundation drain/sump pump problem. Some of the spikes look big enough to be attributed to roof drains or parking lot storm inlets tied to the sanitary sewer. There is not enough information presented in the very brief inflow study. This issue needs to be clarified.

There is no PER documentation that further I/I reduction (or storm water separation) would help stave off lagoon improvements, or if such I/I improvements are not cost effective. We think a more detailed I/I study could be worthwhile. Perhaps, there are a few larger springs in town that are being redirected into the sewer. Without moving the study up gradient and into the system there is no way to tell.

From the single graph provided in the 6 page "inflow study" there was evidence of elevated groundwater levels from mid-March through mid-July in 2014 to the tune of about 10..000 or 20,000 gallons per day. I don't know if that period is representative of every year in Shelby. There are no permit violations associated with this time period, so it seems that high groundwater may not have much effect on wastewater treatment performance. The per capita wastewater production rates are below recommended DEQ design standards.

So far the sump pump meter that the City installed in their main street building has recorded approximately 1300 to 1400 gallons of water in 3 weeks. The Mayor has responded that the building next door is the one with the large volume of ground water, but the owner won't let them meter. I doubt that the ground water from that building is any more than the City building. I do think ground water is a problem. I don't know the source or the amount. From the looks of that single graph, "inflow" or rapidly changing flows in the sewer, could be a problem. I have not correlated high flows to violations, so I don't know if these flows caused problems. I suspect these flows could include roof drains and maybe some parking lot drains in addition to sump pumps.

It appears that I/I and permit violations are not involved in a cause/ effect relationship. Insufficient data exists to prove or disprove the economic feasibility of combined sewer separation or inflow separation (flow from sump pumps, roof drains, and storm inlets connected to the sanitary sewer). The value of an I/I study might be to extend the economic life of the lagoon system if "sewer separation", or separation of storm and sanitary flows, would give some treatment capacity back to the wastewater treatment system.

Potential cost for removal of inflow (huge spikes in flow after storm events) has not been addressed in either the wastewater or storm water PER's. A more detailed I/I study upstream from the bottom manhole may identify roof leaders, parking lot storm inlets, or other contributors to inflow. Getting rid of this inflow ***could*** give some lagoon capacity back and stave off the need for the 4th lagoon cell. There is no documentation presented to prove or disprove this theory. If you had to put $2 million into storm drain

piping to save $3 million in lagoon upgrades it would be worthwhile. I think it is worthwhile to quantify the I/I over time and take enough of a look in the system to see if you can economically get rid of it. There is just a lot of money at stake, and for $20,000 worth of I/I work you would know for sure.

- Will an I/I study show that storm drain construction, or removal of roof leaders from the sewer, might give wastewater treatment capacity back to the City?
- Will storm water improvements help with I/I at all?
- Can the City inventory storm water inlets and see if any tie into the sanitary?
- Will moving the open channel flow meter to successive upstream manholes show any "smoking gun" relative to a few high sources of I/I?

GENERAL COMMENTS:

I do not see a history of permit violations, nor am I aware of any "Notices of Violation" for excessive or ongoing permit violations. It does not seem the lagoon project has a sense of immediate urgency. If there are existing bonds to retire it may be worthy of consideration to get those paid off or paid down before you spend any money. I think it would be good for DEQ Permitting and Compliance People to come and talk to the Council about their views of where you need to go.

The lagoons are undersized by modern day design standards, according to the PER. But, the lack of permit violations and lack of problems does not seem to warrant major expenditures unless the town wishes to be proactive, stay well ahead of regulatory issues, and prepare to grow. Given the lack of consistent population growth, it seems this work may be more "discretionary" rather than required. The size of the project is daunting. The status of your current debt load and bond retirement may play a role in scheduling improvements. Bottom line, the PER does not indicate there has been regulatory problems or pressure to initiate lagoon repairs. The PER indicates the system is operating well but does not meet current design criteria and does not meet future growth needs, as such may exist. So, the impetus for the project is to plan ahead to avoid any potential future regulatory / permit violation issues, which have yet to manifest themselves, and to upgrade to meet current design criteria. It seems like deepening the existing lagoons may be worthy of consideration.

In some ways, it may be worthwhile to consider to "let the sleeping dog lie" until wastewater improvements are really necessary.

- It would be helpful if there was a more complete information and discussion of the potential benefits that storm water improvements might have on inflow events.

- Does Shelby have existing debt to retire before it might consider a worthwhile but not "extremely necessary" wastewater project?

- Is UV necessary, given the potential need to move to spray irrigation where disinfection may not be required?

- Will UV installation allow for wintertime discharge and stave off the need for increased volume to meet hydraulic loading criteria?

- Can Shelby work on obtaining a 20 year waiver of ammonia limits before it proceeds with phased wastewater construction, and is this a good idea?

- Will DEQ work with you on deviating from the 3 foot of freeboard design criteria? The issue here may be leaking lagoon sidewalls, which may precipitate the need for more rapid lining of the existing cells. Priorities may change as a result of more discussion with DEQ.

- Would actual sludge measurements in the lagoons affect cost estimates?

- Are liner costs timely and accurate?

I do not wish to encourage a community from being proactive in accommodating future growth. If the reason for the wastewater project is to do that, then the project should be sold that way. While hydraulic loading does not meet modern day standards, the biological loading must not be too bad or you would be having discharge permit violation problems. There is no evidence in the PER, nor discussion of how the sandbagging affects biological loading criteria. Because your engineer was apparently not aware of the sandbagging, the underlying assumptions on treatment needs may be flawed. I just don't know.

There is no explanation as to why the lagoons are hydraulically overloaded after a massive I/I reduction (slip lining) project. One would think the slip lining would have improved lagoon capacity. It may be that "population growth" as stated as a reason for hydraulic overloading of the lagoons, is not the real reason at all. The lagoons may be simply undersized for the community and have been that way for a long time. The part I do not understand is why Shelby has not had permit violation problems.

I think there are storm drain and wastewater system needs in Shelby. I think the storm water needs may be somewhat discretionary, in that the needs have apparently been on the table for a long time. I think wastewater needs need more refinement, given the freeboard and leakage discussions, and I think it is worthwhile to do more I/I work to see if storm and sanitary improvements can be coordinated to help the lagoon capacity issues. I think wastewater cost estimates and schedule need to be revisited regarding lagoon liner costs.

City Storm Drain Resolution Discussion

Resolution recitals regarding "existing storm water drainage improvements that directs surface water and storm water into the sanitary sewer system" are not supported in the documentation. I

Montana Department of
ENVIRONMENTAL QUALITY

Steve Bullock, Governor

655 Timberwolf Parkway • Suite 3 • Kalispell, MT 59901-1215 • (406) 755-8985 • FAX (406) 755-8977

April 9, 2013

Jason Crawford, PE
Kadrmas, Lee & Jackson
P.O. Box 1567
Helena, MT 59624

Re: City of Shelby – PWSID#MT000328
Port of Northern Montana – Multimodal Hub Center
Water & Sanitary Sewer Extensions, EQ#13-1660 Conditional Approval

Dear Mr. Crawford:

Thank you for the engineering report, water and sewer extension checklists, capacity letters and City approval received February 8, 2013 and March 18, 2013, under the Professional Engineer's seal of William A. Buxton, 13239PE. Additional information pertaining to the hydraulic capacity of the City of Shelby wastewater lagoon system was received on April 1, 2013. Plan review fees were paid February 26 and March 18, 2013. (A refund of $200 will be returned to the City of Shelby because the Deviation Request was not required in the finality.) The submittal was reviewed in accordance with Department Circular DEQ-1, 2006 edition and Circular DEQ-2, 2012 edition.

The plans and specifications for the water main and sanitary sewer main extensions, received February 8, 2013, with replacement Plan Sheets W-18, SS-5 and SS-6 received March 18, 2013, are hereby approved with the conditions listed below. One copy of the plans and specifications bearing the approval stamp of the Department of Environmental Quality is enclosed. A second set will be retained as Department Record. A third set will be provided to the City of Shelby.

Condition One: Approval of the water mains and sewer mains to this area of the City of Shelby are approved. However, connection to the subject water and sewer mains with subdivisions or service connections is strictly prohibited at this time. Any future subdivision applications including "Municipal Facility Exclusion" subdivision applications for connection to the City of Shelby in any area of town will not be approved by MDEQ until the wastewater lagoon hydraulic capacity is adequately addressed, as outlined below. (Based on the existing lagoon storage volume of 41.12 MG, 180-day retention time yields a maximum daily flow rate capacity of 228,444 gpd.)

A. The City of Shelby must install an influent flow meter to their wastewater lagoon in order to capture daily wastewater flow information. If a future subdivision application is sought for connection to the City of Shelby, the influent wastewater lagoon flow data must be presented along with the subdivision application and must illustrate that adequate wastewater lagoon hydraulic capacity exists.

B. In the future, if a subdivision application seeks connection to the City of Shelby wastewater collection system and the influent wastewater lagoon flow monitoring illustrates that capacity is not present to do so, the City of Shelby could propose to enter into an Administrative Order on Consent (AOC) with MDEQ. The AOC would outline strict timeframes for wastewater lagoon upgrade construction simultaneous to subdivision infrastructure construction. Details would need to be discussed and agreed to at that time.

Condition Two: The MDEQ Public Water & Subdivision Bureau is aware that a Preliminary Engineering Report has been submitted to the MDEQ State Revolving Fund program regarding upgrades to the City of Shelby wastewater lagoon system, including an addendum to the PER addressing the issues related to a potential future pork processing plant. Any future proposal to connect a pork processing plant to the City of Shelby wastewater collection and lagoon system must be submitted to the MDEQ Water Protection Bureau to address the necessary pretreatment requirements at that time.

Overall, the water improvements include the installation of approximately 14,300 ln.ft. of 16-inch diameter water main (C905 PVC), 21 fire hydrant assemblies, 35 butterfly valves and one gate valve. Temporary water is intended to be provided at times during the construction project and will be completed in accordance with Montana Public Works Standard Specifications Sixth Edition, Section 01580.

As a part of this project proposal, a 4000-gpm file flow was modeled and the water distribution system was shown to sufficiently maintain pressure of over 20 psi throughout the system (excluding transmission main sections). Additionally, one existing low pressure dead-end location (Junction 262 of the model) experiences low pressures under current conditions that are not worsened with this project and associated fire flow.

The sewer improvements include the installation of approximately 5200 ln. ft. of 8-inch diameter PVC SDR 35 gravity sewer main, 2400 ln. ft. of 10-inch diameter PVC SDR 35 gravity sewer main, 5800 ln. ft. of 12-inch diameter PVC SDR 35 gravity sewer main and 42 new manholes.

Approval is given with the understanding that any deviation from the approved plans and specifications will be submitted to the Department for reappraisal and approval. Prior to operation of the public water and sewer improvements, certification by the project engineer that the constructed system components were completed in accordance with plans and specifications must be submitted to the Department. Within 90 days following completion of the project, a complete set of "as-built" record drawings must be signed, stamped and submitted to the Department. As-built drawings for the influent wastewater flow monitoring equipment must be submitted with the as-built drawings for this project.

It is further understood that construction will be completed within three years of this date. If more than three years elapse before completing construction, plans and specifications must be resubmitted and approved before construction begins. This three-year expiration period does not extend any compliance schedule requirements pursuant to a Department enforcement action against a public water or sewage system.

The applicant is responsible for compliance with all applicable federal, state, local, and tribal law, regulations, and ordinances. Approval in this document is limited solely to the matters therein specifically contained and does not constitute approval, implied or otherwise, for the purposes of any other law, regulation, or ordinance.

Thank you for your efforts on this submittal. If you have any further questions, please contact me at (406) 755-8979 or egillespie@mt.gov.

Sincerely,

Emily J. Gillespie, P.E.
Public Water Supply and Subdivisions Bureau

cc: Bill Moritz, City of Shelby Superintendent, 112 First Street South, Shelby, MT 59474
Larry Bonderud, City of Shelby Mayor, P.O. Box 743, Shelby, MT 59474
Bill Buxton, KLJ Engineering Kalispell (electronic only)
Paul Skubinna, MDEQ Water Protection Bureau (electronic only)
Terry Campbell, MDEQ SRF Program (electronic only)
Toole County Sanitarian
MDEQ Plan Review File
MDEQ PWSID#MT000328 File

Larry Bonderud

From: Jim Yeagley <bicyclinginmt@yahoo.com>
Sent: Tuesday, September 06, 2016 6:13 PM
To: Larry Bonderud
Subject: Fw: Municipal Facilities Exclusion (MFE) - Shelby Best Western Amended Plat

Hi Doc:
It looks a little jumbled, but is this the one you are looking for? If not, I'll keep looking Jim

--- On Sun, 10/25/15, Ron Andersen <rander@3riversdbs.net> wrote:

> From: Ron Andersen <rander@3riversdbs.net>
> Subject: Municipal Facilities Exclusion (MFE) - Shelby Best Western
> Amended Plat
> To: "Jim Yeagley" <bicyclinginmt@yahoo.com>
> Date: Sunday, October 25, 2015, 8:53 AM Jim -- The results of my
> discussion with Barb Kingery were as follows: 1. Shelby is still
> under a moratorium on the use of the MFE, however she will check with
> the State Revolving Fund for current status.2. The MFE does not
> constitute a review under 76-4 MCA therefore it cannot be used to meet
> ARM 17.36.605 (2)(b). 3. Unless the moratorium is lifted the only
> exemption available is ARM
> 17.36.605 (2)(c), however I would not sign off on that without a
> certification for storm water runoff by either a consultant or the
> City of Shelby, as they would do for a review or MFE. Water, waste
> water, and solid waste are not an issue as they are currently in place
> and there is no change in use. However, I am aware of storm water
> runoff problems in the Best Western area, from my observations in
> staying there each week, and would be remiss not requiring such since
> lot size is being reduced.4. ARM 17.36.605 (2)(a) would be
> appropriate for the parcel being segregated for transfer, however
> review would be required for any use that would affect water, waste
> water, storm water runoff, and solid . I emphasize storm water runoff
> for the reason mentioned above and am unaware of the intended use by
> the purchaser.
> I guess
> that's about it. I will be in Shelby tomorrow but am planning to take
> the remainder of the week off, but will be available by phone. I'll
> stop by Guy's office as I haven't seen the amended plat as it was done
> a couple years ago. Thanks. -- Ron