



PROVO MUNICIPAL COUNCIL

Council Retreat: Wastewater Treatment Minutes

2:00 PM, Tuesday, March 20, 2018

Room 310, City Conference Room

351 W Center St, Provo, UT 84601

Agenda ([0:00:00](#))

Roll Call

The following elected officials were present:

Council Chair Gary Winterton
Council Vice-chair David Harding
Council member George Stewart
Council member David Sewell
Council member David Knecht
Council member George Handley
Council member Kay Van Buren
Excused: Mayor Michelle Kaufusi

Prayer

The prayer was given by Council member David Harding.

Business

1. A presentation from the State Division of Water Quality (17-131) ([0:03:13](#))

Dave Decker, Public Works Director, introduced staff and gave context for the presentations during the retreat. The questions distributed to Council members were intended to help the Council understand the concerns of Public Works with regards to the State regulations. Mr. Decker introduced Dr. Erica Gaddis, Director of the State Division of Water Quality (DWQ), and welcomed her staff. Dr. Gaddis thanked the Council and Public Works staff for their efforts and consideration of these critical decisions.

Dr. Gaddis gave background information on the State's water regulations, both those currently in place as well as the regulatory future and financing options as the City considers a large capital project for wastewater treatment. Dr. Gaddis indicated they were happy to answer any questions the Council had. Dr. Gaddis introduced her staff: Kim Shelley, DWQ Assistant Director, who works with permitting; and Ken Hoffman, DWQ Engineering Division, who has been working on Provo City's variance request.

Provo discharges into Mill Race, which flows to Utah Lake. Although this is an older facility, Dr. Gaddis said that past compliance rates have been excellent. The current permitted effluent limits are technology-based, but Dr. Gaddis suggested that based on industry trends and standards, future regulations would most likely be quality-based limits. Dr. Gaddis explained that the state of Utah has developed its own nutrient program: TBPEL (technology-based phosphorous effluent limits). TBPEL has been modified twice to allow variance options. Variances are generally made for economic hardship, if a municipality has an innovative alternative to achieve a commensurate reduction, or if a city is working on a large capital investment

project. Projections show phosphorus discharge to Utah Lake tripling in the next several decades; TBPEL regulations are intended to allay concerns with this.

[\(0:12:01\)](#) Dr. Gaddis outlined the variance request negotiated by Provo City, and outlined the milestones of this option and Provo's innovative alternatives. Dr. Gaddis acknowledged the difficulties in predicting future regulations, as well as the challenge this presents to cities who are trying to make decisions for the future despite this regulatory uncertainty. Dr. Gaddis encouraged Provo to select a project and a technology that can accommodate future regulations. Dr. Gaddis outlined possible areas for future regulation, noting that these were purely hypothetical, but could help illustrate possible areas of regulation in the future:

- 2013 Environmental Protection Agency ammonia limits
- Pharmaceuticals and personal care products
- Change in discharge location [which could affect permit limits]
- Metal effluent limits
- Phosphorus and nitrogen

[\(0:21:57\)](#) Dr. Gaddis gave background information on the Utah Lake Water Quality Study and the implications of this study. The nutrient levels contained in the lake are distinct and separate from Provo's effluent limits, which must comply with the State regulations. Dr. Gaddis outlined the process and structure of the study steering committee, noting that Gary Calder, Water Division Director, was serving as the municipal representative from Provo City on the committee. Dr. Gaddis outlined several questions the study intends to explore. The results of the study would be used to determine a new water quality standard for Utah Lake. If the nutrient content of the lake is impaired, then a TMDL (Total Maximum Daily Load) study would be used to determine where nutrient loads originate (including commercial or industrial discharge, natural or agricultural runoff, future growth, etc.). If a TMDL were required, this would likely be implemented in 2023 under the direction of the steering committee. Any new permit limits resulting from this study would not be implemented until 2030—the State DWQ formerly made this commitment to municipalities.

Dr. Gaddis answered questions from Council members regarding aspects of the study:

- Algae blooms may also be affected by climate change; this is a factor the study will consider.
- Agricultural runoff per law cannot be regulated, but local watershed planners continually work with agricultural landowners to assess what changes they can make which could help reduce their nutrient impacts. There are other programs which also receive funding to assist in these areas.
- Stormwater regulations differ from wastewater treatment regulations. A municipality is issued a permit and has certain requirements regarding regulation of stormwater within their boundaries. There are limits with loading or discharging stormwater to the lake. Load allocations with TMDLs are negotiated and assessed factoring in the various sources noted previously.

Treatment Innovation and Regulatory Flexibility (0:34:48)

The DWQ reviews projects on a case-by-case basis. Some technologies may be more conventional, while others may be an industry-accepted standard, but they will consider each project based on its engineering merits. There is more flexibility with nutrient limits, but less flexibility with permit limits or federally mandated levels. Dr. Gaddis explained several criteria used to assess innovative solutions and caveats applied to the project assessment. Dr. Gaddis discussed several technologies which have been discussed in Utah County and outlined considerations for these technologies: CLEARAS, constructed wetlands, and advanced integrated pond systems. Provo has proposed several innovative options: trading of nutrient levels between an existing and a new plant, trading of nutrient levels with another municipality, land application or reuse, and stormwater or agricultural phosphorous reductions (which would involve calculating the total load and calculating a commensurate load trade).

In response to a question from Council member George Handley, Dr. Gaddis explained that indeed as agricultural land was converted to residential areas through development, this would have an impact on phosphorous levels. She said she would love to meet again with the Council and Public Works to discuss several stormwater projects and initiatives the DWQ is considering.

A public private partnership (P3) is another alternative solution. Dr. Gaddis explained that this has some inherent complications and has not been done often; the body politic is responsible for operations and discharge compliance—thus even in a public private partnership, the responsibility ultimately still falls to the city to ensure compliance and the city must be comfortable with the risk involved.

More and more, the DWQ has advocated a holistic approach to water management, or an integrated water resources management strategy, which examines water quality in the context of water quantity, climate change, and other areas. The DWQ is working on implementing integrated permitting in Park City and Salt Lake City, in which permits are coordinated between stormwater, wastewater, and drinking water.

State Revolving Fund (SRF) Loan Program (0:49:25)

This is a permanent funding source established by the Clean Water Act in the 1970s. Dr. Gaddis outlined what the fund can or cannot be used for, as well as specific criteria associated with funded projects. She also outlined the process by which the State prioritizes awarding of these funds.

Dr. Gaddis explained in detail the funding mechanisms for the SRF, illustrated by a chart in her presentation. Throughout her presentation, Dr. Gaddis responded to questions and clarifications from Council members. Dr. Gaddis explained that the hardship grant fund examines resident income and utility rates compared to other municipalities. Dr. Gaddis explained the process for applying for funding and how the determination is made. Ultimately the Water Quality Board has ultimate authority on interest rates and the loan terms. Dr. Gaddis noted typical rates and terms for the loans they have awarded in recent years and explained the aspects of a project that may affect these terms. The Water Quality Board favors fiscal sustainability, hardship communities, green projects per EPA definition, and first round money. Dr. Gaddis believed Provo City qualified for several of these factors, which would likely result in a favorable rate.

Mr. Hoffman explained common resource recovery projects, such as agricultural reuses (which many farm owners see as drought-proof) or direct potable reuses (which are less desirable for many communities). Mr. Hoffman noted that Utah has some of the most stringent water rights laws nationally.

Dr. Gaddis summarized her messages for the Council:

- They consider the City an important water quality partner to the DWQ
- The DWQ would love to work with Provo on developing a financing package for a capital project
- They encourage Provo to select robust technology that has the potential to accommodate future regulations.

Dr. Gaddis said the largest loan the DWQ has granted was \$70 million at a 0.75% interest rate for Logan City. Each year the DWQ publishes an intended use plan of what projects they anticipate coming, but the total cost of these anticipated projects exceeds their existing resources.

The general standard for sewer rates is 1.4% of modified adjusted gross income of residents—Provo is projected to cross that threshold in fiscal year 2020. Dr. Gaddis explained that the Water Quality Board tends to look more favorably on projects in cities where policymakers have been aggressive in setting rates to address the city's needs. Mr. Hoffman expressed that if Provo presented to the Water Quality Board a study showing rate projections and plans for how Provo sought to adjust rates to fund this project, the Board would look favorably on that. Mr. Hoffman shared federal criteria regarding procurement of engineering services.

Public Works staff asked other questions to clarify items in Dr. Gaddis' presentation. Dr. Gaddis explained that the 1 mg/L phosphorous limit is not a solution to the algae blooms in Utah Lake; this level does not take into account population growth and subsequent increases in discharged water/nutrients. Dr. Gaddis addressed the differences between phosphorous and nitrogen, which behave differently based on their chemical properties and thus have different nutrient limits. Dr. Gaddis addressed the possibility of dredging projects, the efficacy of which would be better determined after the Utah Lake study is completed. She noted other treatment techniques which have been successful elsewhere. None of these is a total solution, but these treatment solutions are good companion solutions to that of putting better water into the lake.

(1:15:42) Mr. Calder asked how long the DWQ permitting process would take if Provo were to elect to build a new treatment plant. Dr. Gaddis and her staff said the process is generally six months, though a change in discharge location may lengthen the process from six months to 9-12 months.

In response to a question from Council member Kay Van Buren, Dr. Gaddis explained that the Water Infrastructure Finance and Innovation Act, which is managed by the federal EPA, is a complement to the SRF for large projects which the SRF cannot manage. WIFIA funds have not yet been utilized in Utah, but Dr. Gaddis indicated that the DWQ would be happy to explore that. Mr. Hoffman indicated that the DWQ does not have many obligated funds at present, as most cities are still working on designs and the loan is not closed until the project's design phase is finished. It is the role of the DWQ to get the dollars on the ground in Utah and they see Provo's project as a very high priority in the state. *Presentation only.*

2. A presentation on wastewater planning (17-131) (1:21:01)

Jimmy McKnight, Public Works Financial Analyst, presented. Mr. McKnight outlined several decision points the Council would discuss during the retreat [though the actual decisions may come at a later time]:

- Whether to construct a new treatment plant or refurbish existing plant
- Whether to pursue a low interest loan from the State or private financing/bonding
- Should staff pursue emerging technologies
- Location of plant [if a new plant were built]

Mr. McKnight briefly touched on the aims of this project, which were a phased approach to a new plant and means to fund the main backbone of sewer infrastructure on the west side of Provo. Mr. McKnight outlined the financial assumptions which formed a framework for the projections with each option:

- Forecasting out to fiscal year 2049
- All options assume a \$200,000 annual operating cost increase
- Options with a bond assumes a 30-year term with 2.8% interest rate
- Options with a short-term loan assume 5-year terms with 1.5% interest rate

Mr. McKnight noted several other financial factors not included in the projections: population growth, CPI (construction price index) inflation, expanded operating costs, conservation, and resource recovery [as a potential revenue stream]. Mr. McKnight outlined financial considerations, projected rate increases, and projected fund balance for each of the following options:

- Pay-as-you-go option
- One short-term loan
- Two short-term loans
- \$240 million bond
- Refurbish existing treatment plant

Mr. McKnight shared side-by-side comparisons graphing the monthly bill projections and fund balance.

Mr. McKnight outlined considerations for the State Revolving Fund (SRF), which has specific requirements to Buy American materials and Davis-Bacon wages. DWQ staff said that their experience is that the difference is generally about 10% higher because of Buy American and Davis-Bacon wages requirements.

Council members and staff asked additional questions of Dr. Gaddis, which she answered:

- Algae is a component or polishing element, rather than a standalone technology.
- The City could fund a planning advance through the DWQ, but it would be difficult to complete an application and secure a loan while the technology method is still an unknown variable.
- It would be possible to obtain a second loan at a future date while still repaying the first loan, however funds are first come, first served. Cities often may refinance one or both loans.

(1:39:30) Mr. McKnight outlined the option developed by Public Works staff which was most in line with projects that have received State funding. This option would be one low-interest loan with a longer term—an \$80 million loan with a 20-year term. The loan would begin in 2019 for the west side sewer main trunk line and phase 1 of new treatment plant to be completed by 2025. The City would repay \$13.2 million in interest over 20 years. Mr. McKnight clarified that \$80 million will not pay for the whole plant, but as the City begin the loan, there is some time to save money and increase rates. This would allow the city to raise rates at a slower pace. It would eventually surpass the other rate options, and then may decrease later on.

Council member David Harding shared a policy consideration with the Council—the sooner or more quickly the City raises rates, the lower the peak amount was projected to be. Council members discussed implications of rate increases related to each option. Council member George Handley asked about the comparable quality differences for the plant itself that would result from each option and how the option is financed. Mr. Decker indicated that one advantage of building a brand new treatment plant was having the advantage of building in phases, train by train. Down the road when the new plant needs rehabilitation, this could likewise be performed in phases with each train, while the plant is still operational. Several of the consultants have pointed out this potential benefit, though this option has the disadvantage of having to balance and run two treatment plants for a period of time. This would result in increased operating costs for about 15 years while maintaining two plants. Mr. Decker indicated that most likely three phases would need to be completed (sometime in the mid-2030s) before the new plant would reach the capacity of the current treatment plant. Mr. Decker noted that having interest from multiple loans would present a challenge.

In sum, the first four options all result in a similar treatment quality, but with different stages and phases. The fifth option, refurbishing the existing plant, holds inherent risk for future regulations. As Provo tries to anticipate future standards, Public Works can explore a more robust technology to handle future regulations, but they are limited significantly by the capabilities of the current plant. The refurbishment is highest risk for treatment quality and regulations. Mr. Decker indicated that inflation could make a huge difference in the later phases of a phased project. The pay-as-you-go option also has some significant risks related to inflation and inflated construction costs. There is also risk in continuing operation of the existing plant as a new phased plant is built—the longer the existing plant is in use, the risk of failure increases.

(1:54:04) Mr. McKnight circled back to several factors not discussed in the models for each option: population growth, construction prices index/inflation, expanded operating costs, conservation, and resource recovery. Mr. McKnight highlighted potential impacts of these factors and shared a spreadsheet showing various inflation impacts. Dustin Grabau, Budget Officer, clarified that the risk was really if the inflation of construction costs outpaces general inflation—if both increase, the purchasing power will be the same because they have increased in parity. The amounts that Provo will have to raise rates may go up as far as the dollar value, but the purchasing power of the rate increase will not change significantly relevant to that. Mr. Decker explained that the intent is to illustrate a fair comparison to Council which could examine what the scenario would look like if construction costs have outpaced inflation—which in the last five years, they have by approximately 1-2%; it is uncertain if this disparity will continue.

Council members and staff commented on the current low-interest rate environment; several thought it advisable to take advantage of this variable which would allow the City to assume less risk with regard to interest rates. Council member David Sewell asked if other cities have been able to successfully incorporate better technology in each phase as they completed a phased approach. Mr. Decker shared details about facilities in Salt Lake County which have successfully done this. Mr. Decker indicated that the plant would be built in four separate trains regardless of the funding method.

Mr. McKnight noted that the rate comparisons with other cities only shows current figures; State regulations will impact all communities on the Wasatch Front. He shared an example from Salt Lake City, who shared on their website recently that because of a new treatment plant, rates will likely double by 2021.

(2:06:40) Mr. Decker shared details and outlined critical dates contained in the draft variance approval letter from the DWQ. The State's response to the variance request states that by June 1, 2018 the Council will need to pass a resolution adopting one of three options [1. Upgrade existing facility, 2. New facility – phased implementation, or 3. New facility – full capacity]. Mr. Decker explained that it was still an option to upgrade the existing facility, but this would require immediate action by the City in order to get the chemical component up to date immediately in order to meet the requirement by 2020. This timeline was determined by the DWQ in order to leave enough time to accommodate that approach if the Council were to choose it. There are additional deadlines in May and December 2019 which require plans for the technology selected and a plan for implementation, along with approximate budgets.

However, in order to take advantage of the financial application that has been in process, the sooner Provo can get direction on the specific technology, the better off the City will be. Public Works is exploring a state-of-the-art technology and facility; staff are leaning towards a membrane bioreactor (MBRs) plant, but the City could take advantage of emerging technologies in combination with MBRs.

Mr. Decker continued to outline next steps:

- Decision on a new plant vs. rehabilitation of existing plant
 - Council tour of existing plant
- Siting study
 - An important decision regarding specific sites and specific technology for a new plant
- Emerging technologies (public-private partnerships)
 - Mr. Decker explained that staff have not sufficiently explored all the technological options to bring a recommendation to the Council, but he said if staff see another local treatment plant using a new technology or encounter a clear-cut reason to pursue an initial investigation, they would certainly look into something like that.
- Sustainability issues (which could include a potential revenue source)
 - Water reuse, energy consumption, resource recovery, and future regulations
- Update on Wastewater Metering
 - There are 32 monitoring sites throughout the City. Public Works does not yet have sufficient data to make clear decisions on development in Provo, but will continue to examine Inflow & Infiltration issues in the collection system. Mr. Decker presented a graph prepared by Rebecca Andrus, Engineer, depicting historic average monthly treatment plant flow rates—the monitoring data is fairly consistent with historic rates, but the data gathering is not complete enough to draw any conclusions at this point in the process.

Council member George Stewart asked which financing options eliminated rate increases due to inflation of interest repayment. Mr. McKnight explained that none of the presented options utilized multiple bonds or

loans; construction costs and inflation may make a difference for rates in the future, but they have not made any assumptions about inflation with regard to multiple bonds or loans.

Council member George Handley expressed that he has not heard any compelling argument for refurbishing the existing plant and that he did not see this as a viable solution. Mr. Decker reminded the Council why this option was included initially—rehabilitating the treatment plant will cost less than the other options for the next 20 years; it will not surpass another option in cost until 2040. Eventually, however, the operation costs of running a plant that is nearly 85 years old will increase substantially. This is also a highly risky option considering the age of the pipes underground—the refurbished plant would still rely on 85-year old elements. This projection for 2040 shows costs assuming there is not a catastrophic failure. Cory Christiansen, Wastewater Treatment Master Plan Consultant, said that the condition assessment of the current plant identified numerous elements which are 15-20 years beyond their useful life; this means the plant carries a high risk of failure at present. While the City would spend less money initially on this option, at the end of the process, the costs to rebuild a new treatment plant will exceed the other options. This option may protect ratepayers in the short-term on paper, but does not account for the big risk the City would be asking ratepayers to make.

In response to a question from Council member David Knecht, Mr. Decker explained that staff have not come to any conclusions regarding emerging technologies at the existing site—the siting study would aid in making those determinations. Mr. Decker reiterated that there are some obvious site choices, but Public Works has not yet selected a site. Staff explained considerations of gravity systems versus continued use of pumping stations—much of this must still be determined by a siting study. The siting study would involve a group of consultants to consider hydrology, sustainability, and other related concerns to the site. Ultimately, the technology and site selected will both be critical components in the wastewater treatment solution.

Motion: George Stewart moved to endorse building a new treatment plant at a site which was yet to be determined and to not endorse rehabilitating the old plant. Seconded by David Sewell.

Roll call vote: Approved 7:0.

Council members asked several follow-up questions, and Mr. Decker provided clarification on these. The Council can move forward with a decision on implementation for the June 1, 2018 deadline without having made a firm decision on a site or the technology component. Mr. Decker indicated, though, that he would prefer reaching a decision about the site as soon as information is available from the siting study, as knowing the outcome of this decision would be helpful earlier in the process. If the Council is inclined to approach the State for funding, Mr. Decker would prefer to start the preliminary process with the State, then as the siting study and additional decisions by the Council are made, Public Works can continue where they left off in the process. Mr. Decker indicated that Mr. McKnight and the wastewater consultants could further examine the implications of Buy America and Davis-Bacon requirements for contracts, procurement, etc. if state funding were to be used.

Motion: George Stewart moved to investigate exploring funding through the State based on the information provided by staff and consultants. Seconded by David Sewell.

Roll call vote: Approved 7:0.

Council members asked for additional information and clarifications which would aid them in making decisions in the coming months, including:

- More pros and cons [of various options]
 - Mr. Decker explained that some pros and cons may only be potential outcomes at this stage in the process, but that the siting study would factor the possible pros and cons for Council and staff consideration.
- Impacts to residents [of various options]

- Having an analog presentation to look at in between meetings
- Results of environmental assessment and siting study
 - Dr. Gaddis indicated that the environmental assessment is included in the State DWQ's loan package. Because the environmental assessment would examine a relatively limited footprint, the analysis is much more straightforward than the kinds of environmental impact studies completed for transportation planning.
- What option does staff recommend? Is this a consensus is it split? Pros and cons and perhaps a ranking by staff preference or support for these would be helpful to Council members.
- A rate comparison chart showing the last several years of rate increases in the context of the future projections. As residents have felt the impacts of recent rate increases, Council members wanted to be sensitive to this and evaluate which options presented a more gradual impact for residents.

Adjournment

Adjourned by unanimous consent.