

TIMPANOGOS SPECIAL SERVICE DISTRICT
ADMINISTRATIVE BOARD RETREAT MINUTES

APPROVED

September 16, 2021

8:00 a.m.

Conference Room

Board Members:

Present: David Bunker Chandler Goodwin Sullivan Love
Chris Condie Craig White Dale Ihrke
Blaine Thomas Jay Meacham Richard Nielson
Brian Braithwaite Mark Christensen

Excused: Mack Straw John Goodman

District Staff: Richard Mickelsen, District Manager Shannon Hansen, Administrative Manager
David Barlow, District Engineer Danette Smith, Board Secretary
Joe Martin, CPA

Others: Kasey Chesnut, Horrocks Engineers Trevor Lindley, Brown and Caldwell
Brandon Wyatt, Bowen Collins & Associates Ryan Bench, Carollo Engineers
Wade Stinson, Aqua Engineers Christina McCulloch, JUB Engineers
Jeff DenBleyker, Jacobs Drew Geiger, Horrocks Engineers
Pete Zemke, Brown and Caldwell Rebecca Yoo, Brown and Caldwell
Mayor Guy Fugal, Pleasant Grove City Gary Thomas, Lehi City
Matt Dalton, Lehi City Ross Dinsdale, Lehi City
Scott Darrington, Pleasant Grove City Marty Beaumont, Pleasant Grove City
Dave Norman, Lehi City Steve Jones, HAL
Jed Muhlestein, Alpine City Jeff Murdoch, Highland City
Andy Spencer, Highland City Craig Ashcroft, Carollo Engineers
Jeff Appel, Ray Quinney and Nebeker

Call to Order

David Bunker, Board Chair, called the meeting to order 8:05 a.m.

1. Introduction

a. Information

Rich said the safety rating (EMOD) for the District when he came to the District was 2.0. It went up to 2.2, then 2.4. It has dropped to 1.5 for 2021. Rich said we are making progress and putting more emphasis on being safe.

Rich said there is an overall 10-year plan for the District. Studies were done to confirm these projects. The 2017 asset management study had treatment plant improvements at \$61 million. The 2020 CFP had Collections System CIP projects at \$90 million and Collections System Rehabilitation projects at \$43 million. The 2020 Master Plan has PCAD and Phosphorus Removal at \$149.1 million, biosolids disposal at \$50 million, and other projects at \$95.9 million for a total 10-year plan of \$489 million. Rich said some of the asset management projects will be incorporated in the master plan.

2. City Master Plan Presentation

a. Video

b. Handout – 2020 Master Plan Executive Summary

1 Rich said this is what he presents to city councils. The Master Plan outlines intentional solutions and milestones
2 based on proven and innovative technologies. The planning included engagement and input from stakeholders as
3 well as review by an independent technical advisory committee (TAC). TSSD listened to and used stakeholder
4 objectives to guide technical alternatives and recommendations. This plan shows costs, projects and implementation
5 with Phase(s) 1 (2021-2035), 2 (2036-2050) and 3 (2051-2060). This plan is a path forward to increase capacity to
6 support a growing population, provide a more sustainable and efficient process, improve the health of Utah Lake and
7 provide right-timed improvements to aging facilities. Rich said there will be a few minor revisions to this Master
8 Plan to update changes that have been made.

9 10 3. Engineer Reports

11 a. JUB

12 i. Collections paper/electronic

13 Christina McCulloch - JUB Engineers

14 Christina said they worked on infiltration repair of one of the large diameter trunk lines this year. They were able
15 to save about \$50,000 by not having to do a sewer bypass, due to researching methods and costs. The other ongoing
16 project is manhole and pipe inspections. The manhole inspections are under way, and pipe inspections are scheduled
17 to be done by the end of the year. That will allow TSSD to have information about the trunk lines and the manholes
18 to make future rehabilitation decisions.

19 Christina said they took GIS data that TSSD currently has and pushed it into an online platform so that it is
20 accessible to multiple staff at the same time. They can also make it accessible in the field to locate manholes and
21 pipes in the field. This was done for the upcoming GIS asset management program. The research was started last
22 year. They plan to put out a new RFP within the next month for an asset management solution to improve record
23 keeping workflow. Goals are to improve efficiency and so crews can manage work requests and completed work
24 requests all in one place. Also, this will make this accessible and available for members to easily access. It will
25 simplify reporting by centralizing everything in a single database. The GIS based system will make the data available
26 to the individual member cities. It also allows for securing the data so each entity can see their own information, but
27 information will be kept secure to just the individual entity.

28 Craig White said the District may want to consider going through the process of classifying the collection's
29 system as a secure, private system so it is not accessible through a GRAMA request. Craig said they have had cities
30 request the data and they have to sign a confidential agreement. Rich agreed.

31 32 b. Jacobs

33 i. Wetlands

34 Jeff DenBleyker - Jacobs Engineering

35 Jeff said this last year they have been looking at mitigating potential impacts to the wetlands for the expansion of
36 the facility. There are about 30-40 acres of wetlands that will need to be mitigated as part of the plant expansion.
37 This will require going through the permitting process with the Corps of Engineers. We need to start developing a
38 plan now as the master plan moves forward. We see that these wetlands can provide a significant benefit to the
39 community. Jeff said they would be incorporating the expansion of the shoreline trail, putting in some education
40 facilities and improving the habitat. It would restore/preserve almost 1.5 miles of shoreline and build 4.5 miles of
41 new trails. The trails would be composed of paved trails, boardwalks, areas crossing wetland, and soft trails to
42 provide access for the public.

43 Jeff said Phase 1 is being worked on this year. It will develop a concept and partnerships. The primary goal is to
44 listen to different viewpoints and incorporate that into a concept that can be carried through. There is a lot of land
45 involved here. Some is owned by the State of Utah, the County, and by North Pointe Special Service District. There
46 is interest in contributing that land over to the District to incorporate into this project. They are finishing up the
47 wetland delineation to map out what wetlands we have. Jeff said they will be seeking the habitat value to get
48 mitigation credits for the expansion of the plant.

49 Jeff said Phase 2 will be in 2022. This will be moving into Section 404 Permitting, engaging with the Corps of
50 Engineers to determine what mitigation credits we can get, developing a mitigation plan and a design. Phase 3 in
51 2023-2024 will be construction and Phase 4 in 2025-2030 we will monitor the evolution of the vegetation and

1 confirm the success of the project. The estimated total costs would be \$12.7 million. We have submitted an
2 application to the state for the ARPA funds requesting \$5 million, local matching funds would be about \$3.7 million,
3 and estimated District funds would be about \$4 million.

4 Jeff said we have also been looking at options to get other wetlands credits. Brian said when Rich presented to
5 Highland City Council, some council members didn't quite understand the issue. It is really our responsibility to
6 make sure the constituents understand this is all about expansion of our plant, it is not about building trails; it is what
7 we need to do to make sure we can expand the plant. It is important as board members that we help them make that
8 connection.

9 ii. Corrals

10 Rich will be giving a presentation to the appropriation committee on October 19th. He will have 5 minutes to
11 present to request another \$200,000. Rich said it has been quite a challenge to get these limno corrals out in the lake.
12 We hired a national firm that anchors boat docks in oceans. It takes about 5 hours to put one of these together and
13 another 4 hours to anchor it in the lake. After some windstorms, they started breaking apart, which caused quite a
14 problem for us. We solved that problem by repairing and replacing. The new and improved limno corrals have
15 withstood multiple storm events. Rich said closer to the shore, we created some square corrals, and added sub
16 aquatic vegetation to see if we could get growth. It was a good success in bringing the vegetation back. Rich said
17 once we make the water calm in the corral and are getting deeper clarity; the algae start growing. Inside the limno
18 corrals it is getting warmer, so growth happens faster. We are trying to collect this information and take samples
19 about every three days. Rich said DWQ can come in and say you need to meet this cleaner level which means we
20 will need to have systems in place to clean our water better. That is what we are planning for in our master plan.
21 Rich said there may be algae one day and a day later there is not any. If the state sees that there are algae blooms on
22 the lake, they will shut it down, but they are not coming back the next day and see that it is gone. Rich believes this
23 is going to help us to learn what is happening on the lake.

24
25 c. Horrocks

26 i. CL-N1: 66" Parallel Westside Interceptor

27 Kasey Chesnut - Horrocks Engineers

28 Kasey said there is an existing 54" line from Saratoga Road to Lehi Center Street. This project will bring a
29 second 66" line through this same alignment. A few areas need to be upsized to 72" but for the most part it is a 66"
30 line that will parallel the southern side of this alignment. This will be in coordination with TSSD and Bowen and
31 Collins, as they have a similar project going on at the same time. This will be reinforced fiberglass pipe. At each
32 end there will be a large diversion structure, one in Saratoga Road and one in Lehi Center Street. These diversion
33 structures not only take flow from the different cities, but also allow the District to isolate one line so they can
34 perform cleaning, maintenance or repairs necessary for extending the life of the lines. Kasey said there are affected
35 parcels on the west end, then the middle area widens, and we are able to stay away from most of the parcels, then the
36 east end narrows again so there are affected parcels there. Kasey said they are at the end of the design now and are
37 waiting to see what they find out with acquisition. They hope to be completed with acquisition in the next couple
38 months and then complete design. Bidding will be the first part of 2022 and construction early spring 2022. Mark
39 Christensen asked about the diversion structure. Kasey said the diversion structure on Saratoga Road will collect
40 lines from the south, north and west, and will accommodate the 54" and 66" going out. It will be about a 20 x 12
41 box. Mark asked if it has to be in that intersection. Kasey said yes; they have looked at all options. Mark said he
42 has some concerns and asked for that to be taken out for now and he would like to discuss it with the design team.
43 Mark said that is the epicenter of where all the infrastructure crosses and that is big chunk of real estate to take out.
44 Kasey said the other diversion structure will be on the east end where another project is being done by Bowen and
45 Collins.

46
47 d. Bowen & Collins

48 i. CFP/IFFP Update

49 Brandon Wyatt - Bowen and Collins

50 Brandon said the District adopted the CFP/IFFP/IFA this last year for the projects they knew were coming. There
51 are lots of projects that are developing, and the completion of the Master Plan creates an immediate need to update

1 the CFP/IFFP. Brandon said they have met with staff to begin the contract process to start that work. The goal of the
2 CFP/IFFP update is to update the plan that you already have. A lot of work has been done in the previous several
3 years to identify growth and identify flows. The update would take the master plan and update the projects, make
4 adjustments needed for Covid and create an updated CFP/IFFP. The goal is to have the CFP/IFFP update completed
5 by May 2022. That will allow three months of time to do the remaining steps in that process: the IFA, time to work
6 with the homebuilder's association and ultimately do a rate study. Pending everything going well, they hope to have
7 a new IFFP ready in September 2022.

8
9 ii. CL-R1: Replace Lehi/American Fork Outfall

10 Brandon said the Lehi/American Fork Outfall project is a 42" pipe that goes from 570 West American Fork into
11 the plant. This will replace the 42" pipe that has been in place for forty years and has condition problems. It will be a
12 new 54" pipe as the CFP identified 28 mgd is needed at buildout and it only has 19 mgd capacity. This will also be a
13 fiberglass reinforced pipe, to establish a standard for these large pipelines for the District and is not subject to
14 corrosion like concrete pipe. Design is 90% complete and the District has them for review. Brandon said they are in
15 the middle of easement acquisition for this project. At the time this original pipeline was built the District standard
16 for easements was 20' wide. That is not wide enough for a 54" sewer; the existing easement will be expanded to 30'
17 wide, and also acquire temporary construction easements.

18 Brandon said because we are tying into the headworks at the treatment plant, there will be some significant bypass
19 that takes place. That creates an opportunity to address some corrosion in the headworks and extend the life of that
20 building. We are tying this pipe into an extension of a box culvert that already connects to the headworks, so we will
21 bring the 54" line down the access road and into the headworks. There will also be some work to re-lay the plant
22 drain that comes into the headworks. This project will have a significant impact at the front of the plant. Fortunately,
23 there is another access on the west side of the plant, which will be put into use for both employees and public.
24 Brandon said next steps are to complete the easement acquisitions, then complete final design and update the
25 engineer's opinion of probable construction cost, with hope of a bid and construction starting in 2022.

26
27 iii. CL-N2: Westside Collection Study

28 1. PR-1: Rehab of 60" RCP

29 iv. Lift Station

30 1. SR-1: Rehab of 60" RCP

31 2. TP-6: Headworks/Grit System upgrades

32 Brandon said the CFP from this last year identified a significant capacity restriction from Lehi Center Street to the
33 treatment plant. This comes all the way from Saratoga Springs, hence the project Horrocks is doing. The CFP
34 identified several projects that needed to take place to address capacity: this existing 60" line, a potential lift station
35 and another pipeline coming into the treatment plant. However, time and money weren't available to really look at
36 these capacity issues or the right way to get that capacity from Lehi Center Street to the plant. The Westside
37 Collection Study has done this. Brandon said they looked at the capacity between Center Street and the BHLS and it
38 has a 29 mgd capacity. The CFP says in 25 years you will need 56.5 mgd capacity in this pipeline. At buildout you
39 will need 84 mgd. That is a significant upsize to that 60" pipe. Brandon said they looked at a few potential
40 alignments and some would not work. They looked at alignment options that would take advantage of the District's
41 existing utility easements and planned transportation projects by American Fork City. One alternative alignment is
42 paralleling the existing pipeline, where possible, and tying into American Fork's Lakeshore Drive. They determined
43 that in order to get to 84 mgd capacity, there will need to be two -78" pipelines at a flat slope. The existing pipeline
44 is laid at 03% and the new pipeline will have to run at about that same slope. When the original 60" pipeline was
45 built, access and maintenance were not considered. It goes across wetlands and fields with no access. That is
46 unsustainable for future consideration, especially for pipelines this size. They are looking at providing access along
47 this pipeline. Brandon said they know they need at least a 15' wide improved access all the way along the project.
48 They also want the access to be all-weather and in all conditions. This creates some opportunities for trails. Brandon
49 said the determining factor whether trails work or not will be whether the property owners will accept that. It is one
50 thing to ask for a sewer easement, it is another thing to ask for a sewer easement with truck access and access for

1 public. The alignment alternative analysis is nearly complete. The plan is to bring that to the board next month.
2 Once that is complete, we can begin the property acquisition process.

3 The Boat Harbor Lift Station and Lakeside Lift Station were projects identified in the CFP. The CFP said we
4 need a new lift station near 570 west. It also identified \$15 million of improvements that need to happen at BHLS.
5 A lift station out by 570 West did not make a lot of sense, it would need to be 50 ft deep, which is not advisable.
6 Brandon said they looked at the consolidating the efforts for both lift stations. Brandon said a lift station evaluation
7 determined the capacity in 2045 would be 57 mgd, buildout would be 87 mgd. The District has recently acquired the
8 Earl property south of the existing BHLS. That site has been determined to be the place for a new lift station for the
9 District. The lift station will take the Lakeside Lift Station flows and the BHLS flows and bring them into the
10 treatment plant through two 48" force mains. Those 48" force mains potentially come down American Fork 1700
11 South and directly into the plant. There is also the possibility that one of those force mains could come up to 1500
12 South and utilize the existing 60" line that is already there. This lift station has been identified as a significant
13 improvement for the District. It will include screening and grit removal, odor control, and a 57 mgd lift station with
14 space to expand to 84 mgd. By adding screening and grit removal you will increase the life of the pumps. By
15 having pumping capacity and the screening and grit removal, it would eliminate the need to increase the capacity at
16 the headworks, influent pump station and grit removal. This will allow us to pump directly to the facilities that will
17 be part of the master plan going forward as opposed to pumping into the headworks. Brandon said next steps will be
18 to complete a force main route alternative analysis, preliminary design, and then final design.

19
20 e. Aqua Engineering

21 i. TP-9: Composting

22 ii. TP-7: Biosolids disposal Facility 1:40

23 Wade Stinson - Aqua Engineering

24 Wade said they have been working on options for the disposal/removal of the biosolids. There are four
25 recommended alternatives: landfilling, composting, land application, and drying. Wade said Rich has also asked
26 them to look into a hybrid scenario. The District is currently landfilling. The purpose of maintaining the landfilling
27 is that it is immediate, and we have contracts, but we do not see the ability to rely on those long term.

28 Wade said they looked at on-site as well as off-site composting solutions. Composting on site has caused issues
29 in the past with odors. They looked at options that could subside those odors and potentially be feasible here on site.
30 Wade said they looked into the idea of vessel composting. It would enable a full enclosed environment that would
31 capture all odors and treat them ahead of being released into the environment. To do on-site composting there is
32 legal action that would need an amendment. Wade said discussions have started on that. Wade said they have visited
33 with Engineered Compost Systems in Washington, who does the vessel composting. Rich said there is not facility
34 our size that does this. Wade said there is a potential for a challenge to get enough green waste to support full scale
35 composting.

36 Wade said with land application, they primarily focused on irrigated land alternatives. They have been in
37 communication and met with the largest property owner in Elberta. They are very interested in using biosolids as
38 part of their farm management plan. The last time they met, they discussed how they can acquire up to 20 years of
39 contracts providing them biosolids. One challenge of the land application, especially in the dewatered cake-form that
40 the District currently has, is storage. With irrigated land, you only access that land once or twice a year, so you need
41 to store nine to ten months' worth of dewatered cake solids.

42 Another alternative is drying/pelletizing. Wade said South Valley Sewer District has recently started a dryer and
43 it is a phenomenal product. The biosolids go through from a dewatered process and dry to a better than 95% dry
44 Class A product. It can be spread through any agriculture spreader fertilizer system. With the dryer/pelletizer, it
45 takes a lot of gas, so O & M goes up. However, the product coming out is at a reduced volume. The benefit of a
46 dryer system is between the year 2040 - 2060 the footprint is not any greater; it would just be a matter of turning up
47 the gas.

48 Wade said Rich asked them to look into a hybrid using a few of the different alternatives: onsite compost 50%,
49 land application 0-100%, and drying 100%. Wade said they would still need to put time into refining and

1 understanding the benefit of running two systems at once, but it looks very feasible. This alternative approach would
2 be onsite composting scaled to meet 2015 green waste volume, dryer/pelletizer would be full buildout and land apply
3 a Class A product with reduced storage requirement. It gives us 150% capacity, so there are options and
4 sustainability to protect the District if one of these shuts down. Mark said the reality is that agriculture land will go
5 away so he likes the approach of having alternate paths. Sullivan said he likes the multi alternative approach; we
6 take care of ourselves and look out for our future. Also, other entities will be looking for places to dispose of their
7 biosolids and the earlier we can get a secure position in these areas, we are ahead of the game.

8 Brian Braithwaite asked if we could create enough of our own natural gas to facilitate the drying process. Rich
9 said we will create this renewable energy but will sell it back to Dominion Energy. The way the gas market is, we
10 will sell it at more money than what we buy it back, so it is more valuable for us to sell it than to use. Wade said one
11 a benefit to reduced scale composting along with the dryer is it leaves you room to add capacity into the composting
12 once we find that the green waste will support that additional process. Mark asked which of these is the most labor
13 intensive. Rich said composting is six employees, and the dryer is two. David Bunker said we should always have a
14 backup plan. The least favorable for him is putting any kind of biosolids on the road. David said his preference
15 would be to keep it on site and produce it into a Class A or have public come and get it with their vehicles. Wade
16 said both the dryer and the compost are Class A product, they are no longer the water cake. Rich said next few
17 months we will start drilling down on these options.

18
19 f. Corollo

20 i. EL-1: Power Quality (Switchgear/Generators, PLC and OIT)

21 Ryan Bench - Carollo Engineers

22 Ryan reported on the Generator Switchgear project. Ryan said even though this is a small project compared to
23 some of the others, it is an important project for the District as it gives more reliability to the electrical system. Ryan
24 said the district has utility power from Rocky Mountain Power that comes into a main plant switch gear which feeds
25 the plant. On site there are three stand-by generators. When utility power is lost, those stand-by generators provide
26 power to the plant. They need to be exercised and tested to make sure they are working properly. In order to test a
27 generator, you need to turn it on, get it working and synchronized to the main switchgear. As you dump your power
28 from the generator onto the switchgear, you automatically lose power from the utility. Rocky Mountain Power does
29 not allow you to parallel the two powers onto the main switchgear.

30 When utility power is lost, there is one generator feeding your whole plant. The plant loads are much larger than
31 what one generator can handle. When a generator is tested, things flicker, and PLC's shut down. This project will
32 add a new dedicated switchgear for those generators. You can test all of the generators and synchronize to the
33 switchgear and there is enough power from the generators to power the plant. Ryan said they will also add a load
34 bank. You can test one generator at a time, turn it on and dump it on to the switchgear, which then goes to the load
35 bank and still continue to run utility power to the plant. That will greatly help the district to make sure the generators
36 are functioning properly when they are needed. Ryan said if utility power is lost, then a generator will turn on, and a
37 second one will turn on closely behind it. Two generators are needed to run the plant. The third is a standby. With
38 all these projects in the future, we will need to figure all those load additions to know when the fourth generator
39 would need to be installed so there is always a standby. Rich said when everything is upsized to the 2040 plant, we
40 would need to have another generator. Ryan said the project is 40% complete and is scheduled to be completed June
41 2022.

42
43 g. Brown & Caldwell

44 i. TP-2: Blower Replacement

45 Pete Zemke - Brown and Caldwell

46 Pete said the District completed the first blower improvements around 2013 with K-Turbo air bearing high speed
47 blowers. About the time the blowers were installed, K-Turbo ran into some financial and legal issues and eventually
48 folded. As a result, the District didn't get the necessary training, and were unable to get the proprietary parts. Brown
49 and Caldwell were brought on to work on new aeration design. The process engineers worked with the State of Utah
50 to show the District only needed about two-thirds of the oxygen of the old method. They state approved it and they

1 were able to reduce the blowers by about two-thirds. The District now has installed integrally geared turbo blowers
2 from GL Turbo, six 350 HP GL Turbo blowers on the east side, and three 350 HP GL Turbo blowers on the west
3 side. There were two 400 Air Bearing Turbo blowers installed as a hold over to replace the failing K-Turbo blowers,
4 and there is one reserve 300 HP K-Turbo blower on the east side just to satisfy the plus 1 requirement. The District
5 has enough blowers to last through 2040.

6 In addition to the blowers, there were a number of improvements to the aeration basins. Previously, there was one
7 aeration control valve per process train and there are now six aeration control valves. It is broken into zones and
8 each zone gets exactly the amount of air it needs for the process. It is expected to result in some significant air
9 reductions and aerations savings. Pete said they have recently reached substantial completion and expect to have
10 final completion in October. The anticipated operational benefits are fewer blowers, and the GL Turbo Blowers
11 have a 10-year parts warranty, 5-year performance bond, extensive training, and non-proprietary industrial-grade
12 components with remote and onsite technical support. Pete said there are also anticipated long term energy savings
13 and the District is eligible for a rebate from Rocky Mountain Power which could be significant.

14 ii. Master Plan

- 15 1. Primary clarification
- 16 2. Thickening, Anaerobic Digestion, Gas Upgrading
- 17 3. Sidestream N and P
- 18 4. Effluent Filtration, UV Disinfection, Outfall Improvements
- 19 5. Composting

20 Rebecca Yoo - Brown and Caldwell

21 Rebecca gave information on the Primary Filter Pilot and Tertiary Filter Pilot. Rebecca said they first did the
22 Primary Filter Pilot. The main purpose of this pilot was to look at whether a filtration system would be a viable
23 option over primary clarifiers which are more common. Primary filters have several other advantages over primary
24 clarifiers, which include a smaller footprint, lower capital costs and increased solids recovery. As part of the pilot,
25 they looked at several water quality parameters on the influent and effluent as well as the backwash flow. Rebecca
26 said they looked at two systems, Aqua Aerobics (disc filter with pile cloth media) and Huber (fine mesh drum filters),
27 where the solids are captured inside the drum. It was a great opportunity for operators to learn about what it would
28 take to run these systems. Results showed both of the primary filter pilots performed well. They had higher removal
29 rates on BOD, COD and TSS than a primary clarifier. Rebecca said they are waiting for the pilot results from Aqua
30 Aerobics. Rich said the Aqua Aerobics Pilot has a benefit that Huber does not; it has a skimmer to skim off fat, oils
31 and grease. Rich said we would choose the standard Primary Clarifier design, the Huber or the Aqua Aerobics. We
32 do not have the footprint for the standard primary clarifier, so we are leaning away from that.

33 Rebecca said the Tertiary Filter Pilot is on site right now. The purpose of this pilot is look at whether we can
34 reduce the total phosphors levels down to 0.1 mg/L. Total phosphorus consists of both particulate phosphorus and
35 soluble phosphorus. The particulate phosphorus can be removed with the filter and the soluble phosphorus is
36 integrated into the wastewater so it would pass right through the filter. We would likely need chemical addition to
37 reach that low level of total phosphorus. Rebecca said they did a jar test to test different chemicals/dosing to figure
38 out what would be optimal. The current phosphorus limit is 1.0 mg/L. We hope to be able to reach 0.1 mg/L by
39 2023-2024 if we implement these tertiary filters.

40 Trevor Lindley – Brown and Caldwell

41 Trevor said there was a desire to understand more about how the master plan would impact electrical. One
42 generator just barely meets the average plant load, and we need that second generator to meet existing peak demand.
43 With Phase 1 of the Master Plan (New UV System, Tertiary Filter Bldg., PC, gas upgrading) it would demand more
44 than one generator and high demand would require just above 2 generators. When you get to the Phase 2 in 2037-
45 2040, you would be looking at adding the fourth generator. Trevor said they followed up with Rocky Mountain
46 Power to look at relocating the big transmission line and the concept of a second utility service. They proposed a
47
48

1 feasibility study for about \$15,000.00 to study the relocation of the transmission line and a study identifying a second
2 independent utility circuit for \$10,000.00.

3 Trevor said the Secondary Clarifier Improvements is mostly a maintenance project. We are going to pilot test
4 using hydrocyclones. They will spin the bugs and get rid of the lighter bugs, which make the process run poorly, and
5 keep the heavier bugs in the process. We will test to see how well that makes the process perform. This pilot project
6 to verify we can minimize the number of secondary clarifiers we have to build in the future.

7
8 h. Staff

9 i. Pond Rehabilitation

10 ii. Electrical (city meters, belt press)

11 Rich said the belt press installation was mostly done by staff. We have employees with plumbing experience who
12 installed pvc pipe and others who did the iron work. All electrical hook ups were done by staff. We have been
13 working on the flow meters the past two and a half years. This will connect meters to the cloud and send us the data.
14 We have three of these left and by the end of the year all of them will have remote capability.

15
16 i. Water Reuse

17 Rich said we live in a desert and as we run out of water, we are going to want water reuse. Rich requested help
18 from Jeff Appel, Ray Quinney and Nebeker, two years ago on information about the water rights. Jeff Appel said he
19 has been in charge of getting the water rights together and making them work better. In the course of doing that, he
20 has been looking at reuse and wetland enhancement. Jeff said these two projects seem to be moving forward, under
21 Rich's guidance. Jeff said he needs to understand what the water rights are of each member entity. They are
22 categorized as municipal water rights. There is a statute that allows us to do water reuse and as member entities of
23 TSSD, the law believes you have not lost dominion over your water rights, and they are still within your scope to
24 recapture. The statute allows this to happen if the water rights are categorized as municipal, and the reuse is
25 consistent with the underlying right. If the entity has the water rights, we will enter into a reuse authorization
26 contract, once accepted by the state. There are two approvals required. The first by the Water Quality Board,
27 Division of Water Quality. They make sure the effluent meets water quality standards and oversee the construction
28 and the operating permit. The second agency involved is the Utah State Engineer, Division of Water Rights. They
29 implement the statute (73-3C-302). There are 2 stipulations; you cannot enlarge your underlying rights (that is why
30 we use municipal rights), and you have to satisfy return flow with clients. Jeff said he already made contact with the
31 Division of Water Quality, the Water Quality Board, and the State Engineer. The State Engineer really wanted to be
32 involved in this. It is likely to require a change application with the State Engineer, as you would be you moving the
33 place of use from where it was back to the city. The State likes the idea of reusing water, and the State Engineer is
34 going to be mindful of the impact to Utah Lake, downstream water users, and the Great Salt Lake. All of that will go
35 into the equation.

36 Jeff Appel said the wetland enhancement program is complimentary to the water reuse. There are some surface
37 water rights that TSSD owns outright. It comes through the plant and has historically irrigated the property at the
38 District. That water that would have been used for irrigation purpose is going to run directly to Utah Lake to increase
39 the wetlands. The other 50% of would have been going to the Lake. When we present this to the State Engineers,
40 there will be some credits for that. There are several hundred feet of surface water that may go to this purpose. Jeff
41 said municipal water is culinary, stock, and irrigation water and this will be reused for municipal purposes. This is
42 why we will be able to do it. Jeff said yes, irrigation is 60% consumptive, the rest is return flow to the ground; when
43 you flush the toilet, you take it out of the ground and use for culinary purposes, he has seen the numbers as high as
44 90%. The statute allows for that water to be reused because it has not escaped your dominion.

45 Rich said we have talked about having a tertiary filter building, which will cost us \$40 million. It is highly likely
46 when DWQ finishes their Utah Lake Water Quality Study, it will come with a lower phosphorus limit. That is why
47 we need this tertiary filter building. When we make the water that clean, it becomes available for public use. Rich
48 said he wants to know if anyone is interested in this concept; it doesn't matter to him if he sends it to Utah Lake or
49 the wetlands or to reuse. Rich said we will not be charging for this reuse water because rate payers have already paid
50 for it to be cleaned. Rich said if the entity has the water rights they can have it back, they will just have to work out
51 how to get it back to their entity.

1 Rich said none of this works if we do not have this tertiary filter building, which is \$40 million, and this board
2 would have to approve that. This building does multiple things as well as prepares us for the 2030 permit
3 parameters. Rich said he has told DWQ if they continue lowering our parameter limits, we are going to make the
4 water clean enough people are going to want their water back. Rich said every wastewater plant in Utah County is
5 looking at doing some kind of water reuse because of the new permit parameters on the horizon. Rich said to meet
6 the parameters he will need to add Alum and Polymer. If you want water reuse, would not want the phosphorus
7 removed because it is beneficial for landscape, so we would not need to add any polymer or alum and that would
8 save money. Rich said it could be \$3-\$10 million dollars per year in chemical costs; that is to be determined from the
9 study. Mark Christensen said he thinks most people think this is a great concept but how do we get our water back,
10 what is the cost, and how is it funded from a capital standpoint.

11 12 4. Budget

13 a. Departments

14 b. Master Plan

15 Rich said the Master Plan implementation will transition from planning to funding/design and construction. We
16 will put together a Master Plan Project Management. There District has five professional service agreements, and we
17 will be using them for the bulk of this work as we go through design the next couple of years. We need to have a
18 design standard, so all of these firms know what we need them to accomplish. When we finish these documents and
19 go out for bid, we will have a standard form. The master plan projects will be in phases 1, 2, and 3. Most of the
20 work the next two and a half years will be design. In 2024 we will go out for qualifications for contractors and then
21 go out for an RFP. Rich said there have been discussions with DWQ here the last two months and they have said our
22 permit parameters will get lower. They will notify us what those permit limits will look like by January 2024. Our
23 permit will come up in 2025. We will need to get a variance to have time to build what it takes to meet the limit. It
24 will give us 5 years to build a facility. Rich said the Master Plan has for us to meet Total Inorganic Nitrogen (TIN)
25 level of 10 mg/L and a phosphorus level of 0.1 mg/L. We may not need to be in compliance until 2030, but we are
26 prepping with the Tertiary Filter Building.

27 Sam Grimes, Operations Foreman, talked about the Manager's Plus asset management software. Sam said we
28 currently have just over half of our assets serialized with asset barcodes. Scanning that barcode pulls up an asset
29 overview screen. The asset overview will show previous work, upcoming work, preventative maintenance schedules,
30 attached photos, and O & M manuals. Inventory is uploaded and will alert us when we hit our base stocking level.
31 This will also track man hours, parts and labor, and costs. Sam said we have 85% of the assets in the system. Sam's
32 goal is to have it all done by the end of the year. Rich said Sam has done a great job; he has watched multiple
33 trainings and educated staff.

34 35 c. User Rates

36 Joe Martin showed a comparison of revenues/expenses and cost/1000 gallon between TSSD and other plants.
37 David Bunker said as we grow and start processing more, do we anticipate that our cost/gallon will decrease. Rich
38 said we do not know the answer to that. Rich said he has a plan to upgrade the bioreactor diffusion. The models say
39 we will be able to save 50% of our power consumption by doing that. Rich is looking at those things to help reduce
40 our energy costs. Brian said as we grow, and land becomes more expensive he feels our costs are going to go up due
41 to the overall costs going up in the environment. Joe said our power bill is about \$100,000/month right now. If we
42 can cut that it would be a big savings. Also, depreciation is part of operating expenses; even those capital expenses
43 are expensed over time which adds to our operating expense.

44 Joe said the only budget amendment made to the 2021 amended budget is solid waste disposal. We budgeted \$2.1
45 million and will increase that to \$2.4 million. Next year we will increase that to \$2.5 million. Joe said next month at
46 board meeting we will get into the budget some more and may be approving a proposed budget.

47 Joe said we budget a multi-year project and estimate the amount we are going to spend for each year. At the end
48 of the year if the contractor bills us for something we didn't estimate it takes us over that budget. The project didn't
49 go over the project total, but it looks like we went over budget for the year. Joe proposed we put the full amount of
50 the project cost in the first year and deduct what is spent each year to become our budget for the next year. Craig
51 White said he puts the whole project amount in his budget; at the end of the year does a work in progress and brings

1 the expense forward. Mark said his concern is by doing that you are going to allocate the cash and then say we need
2 to bond because the money is tied up in these projects, when we haven't spent our actual cash. Joe said his
3 philosophy is not to ever use the budget itself to establish rates. David Bunker said we currently have a policy to
4 keep a certain reserve fund based on our budget. Joe asked if that was based on the budget or on the prior year's
5 expense. Rich said the cash reserve policy is half of the prior year's expenses and the asset management costs for the
6 current year. David Bunker said we would need to make sure if we change the budget to show the total project costs
7 there is nothing to reflect a change on our cash reserve policy. The Board talked about rolling the capital projects
8 into one budget to give more flexibility and still have the detailed projects to give clarity where they are at year to
9 year. Mark said he doesn't see the need to change what we are doing.

10 Joe said there is a 10-year \$489 million plan with multiple projects which have been discussed today. When we
11 have talked about financing for the future, we have talked about everything from saving cash to pay or bond for
12 everything. Joe said we do have a fair amount of cash on hand. Our combined approach is any cost to existing users
13 would be paid with cash on hand, since most of the cash came from existing users, and bond for any part that is
14 growth. David Bunker said if a project has a growth component to it, especially if it is 10 plus years growth, we
15 should bond for it. David said we should use the cash for those things people have already paid for, not all projects
16 will be due to growth. Rich said before we start construction on a project, we will have secured funding to pay for it,
17 either with cash on hand or bonds. Joe said if we do a growth-related project, but haven't bonded yet, and use the
18 cash we have, if it is impact fee qualified, we would track that to what we will pay ourselves back.

19 Rich showed his estimate of what that 2022 CFP would look like and an estimate of costs and how much would
20 be paid by existing users and how much by new users. Mark said it would be many bonds, because of the 5-year
21 spend limit. Rich said that is correct, he is looking at a 20-year window. David Bunker said the bottom line is that
22 eventually we will run out of cash, and we are not only going to have to bond for future growth but also existing
23 users. That translates to a rate increase at some point in the future, we do not know when, but we do know it is
24 coming.

25

26 Meeting Adjourned 2:00 p.m.