Oso Del Agua LLC

City of Truth or Consequences WWTF (DP-1162)

Onsite Training and Technical Assistance Report (Follow-up)

Visit Date: 5-14-25

Report Date: 5-22-25

View of the Truth or Consequences Wastewater Treatment Facility

Overview

Oso del Agua LLC (OdA) has been contracted by the New Mexico Environment Department Ground Water Quality Bureau (GWQB) to provide onsite training and technical assistance to wastewater treatment facilities throughout New Mexico to help facilities achieve and maintain compliance with their Ground Water/Liquid Waste Discharge Permits. Services are delivered at no-cost to facility owners/operators and are not related to any enforcement actions. Note that the suggestions made within this report are only recommendations, not enforceable requirements.

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Onsite Follow-up Visit Summary

Robert George, Field Training Specialist for Oso del Agua LLC performed a follow-up onsite visit to the wastewater treatment facility (WWTF) that serves the City of Truth or Consequences (T or C) on May 14, 2025. The original visit to this facility was conducted on December 6, 2022. During the visit, Mr. George met with the City's Regulation and Compliance Specialist, Jamie Foreman, Operator/Laboratory Analyst Patrick Lovall, Laborers Nial Ellis and Chris Thomas, and City Manager Gary Whitehead. Jessie Cole works as a contract operator at this facility but was unable to attend the site visit. Mingcheng Ren, Jayson Romero, and Haylea Nisbet from NMED also participate throughout the visit.

This facility discharges reclaimed wastewater pursuant to ground water Discharge Permit DP-1162, which was last renewed on March 1, 2019, and expired on February 29, 2024 (the permit continues administratively). The facility also discharges pursuant to a National Pollutant Discharge Elimination System (NPDES) permit (NM0020681), last renewed on April 1, 2022 and expiring on March 31, 2027.

Although the physical condition of the treatment works is marginal, it continues to produce a high-quality effluent that generally complies with the terms of its state and federal permits. However, unless timely actions are taken, the facility condition issues will begin to impact permit compliance. Other important considerations involving safety, the laboratory, facility staffing/certification, and quarterly monitoring and reporting were addressed in OdA's report (from the 12/6/22 visit). That report should be considered as a companion to this report and most of the recommendations from that report remain appropriate, almost three years later. Some of the problems noted then, such as the need to maintain a qualified workforce, have deteriorated further. Please review the recommendations from the past report in conjunction with this report.

OdA evaluated the treatment system and provided training/recommendations in the following areas:

1. Facility Condition/Needed Improvements
2. Short-Term Capital Improvements
3. O&M Repair Projects
4. Recommended Equipment Spares

Note that while efforts have been made to make this report accessible to the general reader, the technical sections are intended primarily for knowledgeable operators, lab analysts, and engineering professionals. Not all industry acronyms are defined, and the author assumes that some of the scientific/technical concepts employed are already understood by the reader.

Facility Condition/Needed Improvements

Much of the T or C WWTF equipment and many of the structures are old/dilapidated, and several key processes are non-functional or only working marginally. The major components, such as the influent liftstation, parts of the entrance works, and aeration basin have been online for approaching 40 years. Most WWTF processes have a useful design life of 25 – 30 years. At this point, the condition of the aeration basin concrete structure is in question, the abandoned brush-rotor support structures are corroding, and vegetation is taking root within cracks in the basin. Accumulation of material within the aeration basin has likely reduced its volume. Within the next 2 - 4 years, the City should conduct a Preliminary Engineering Report (PER) to evaluate facility upgrade/replacement alternatives, and the City should be planning for and funding a major facility upgrade/replacement project within the next 3 – 5 years.

Simply to remain functional, this facility needs to undergo several smaller critical capital improvement projects, and critical equipment repairs spanning the next few months and years. This report seeks to prioritize these short-term capital and O&M projects and discuss them in some detail. However, these short-term projects will address the highest priority needs to keep the system functional but will do little to address the long-term need for planning, design, and construction aimed at upgrading and/or replacing the main treatment components of this facility. Where possible, OdA's short-term project recommendations in this report account for the long-term goal of completing a major upgrade to this facility.

Major deficiencies at this facility that need to be addressed with short-term capital improvement projects include:

1. Secondary Clarifiers (addressing launder failures and scum removal)
2. Entrance Works (screening and grit removal)
3. Automation of the Solids Wasting Process
4. Closure of abandoned structures

Major deficiencies at this facility that need to be addressed through O&M activities include:

1. Repair of aeration blower/mixers
2. Influent liftstation pump control repairs
3. Influent liftstation wetwell maintenance
4. Effluent Sampler Replacment

Short-Term Capital Improvement Projects

The short-term capital improvement projects are discussed in the following section. The projects are prioritized by numeric value, with the lowest value corresponding to the highest priority project.

(1) Secondary Clarifiers - Two problems are affecting the secondary clarifiers. The first involves failure of the effluent launder. The second relates to problems with the clarifier scum boxes. Both problems should be solved at the same time under a single project. The considerations are discussed below.

Launder Replacement: The secondary clarifiers are equipment with fiberglass launders that support fiberglass weir plates for the overflow of the clarifier effluent. The launders represent a significant buoyant load and have dislodged from their support brackets and floated up despite repeated attempts to repair them. The clarifier overflow weirs (attached at the top of the launder) must operate level to ensure that the clarifier can provide the maximum solids settling without short circuiting. At this point, the most practical solution is to replace the launders, supports, outer ring baffle, and weirs with stainless steel units. It should be possible to replace only the affected clarifier elements while retaining the clarifier drive units, sludge rake/skimmer arms, scum boxes, and all other equipment in the clarifiers. If one manufacturer suggests this cannot be done, seek out another.

Several companies manufacture clarifier equipment, including launders and weirs. Here are some of the more reputable companies:

1. Xylem https://www.xylem.com/en-us/catalog/products--services/clarifiers--separators/clarifiers/envirex-clarifier-retrofit-upgrade-and-aftermarket-solutions/
2. WesTech https://www.westechwater.com/products/clarifier-conventional
3. Ovivo (Enviroquip) https://www.ovivowater.com/en/technologies/clarification/

Automated Launder/Weir Cleaning: As part of the lander/weir replacement project, it would be valuable to install automated weir cleaning equipment. Due to exposure to sunlight and the presence of nutrients, the weirs offer prime growing conditions for blue-green algae (cyanobacteria). If allowed to accumulate, the cyanobacteria slough off and exit with the effluent where they shield pathogens in the UV disinfection process. This can cause non-compliance and an increased numbers of viable pathogens in the effluent. To overcome this, the operators routinely clean the launders and weirs in the clarifiers. But the time spent manually cleaning the weirs could be better spent doing other things and automated systems are commercially available. Some of these systems rely on water spray while others utilize spring mounted brushes. The brush systems tend to work best and use less energy. Here are two manufacturers of lander/weir cleaning equipment:

1. GillTeq https://gillteq.com/
2. Ford Hall https://fordhall.com/

Clarifier Scum Box: Floating material that collects on the surface of the secondary clarifiers is continually skimmed by the surface arm of the sludge rake mechanism and deposited into a chute that leads to the clarifier scum box. This material is typically then pumped to the digester to permanently remove it from the treatment process. However (inexplicably), the clarifier scum box was not equipped with a pump to remove the accumulated material.

Following OdA's last visit, the operators installed a small submersible pump, power supply, and PVC piping to discharge the scum box to nearby sand drying beds (as a temporary solution). But the beds became full, and there are concerns that the beds could be leaking into the nearby Rio Grande. The City has since returned to using a gas pump to transfer the scum to the aeration basin. At this point, it would make sense to install PVC piping to allow the electric pump to discharge to the aeration basin so that the system can be (temporarily) automated. When working, the level of the scum box should be maintained at < 2ft so that the scum does not build up and thicken to the point that the submersible pump fails. This should work as a suitable approach until a long-term solution can be put in place as part of the clarifier re-fit project.

Clarifier Scum Box Long-term Solution – The long-term solution is to install duplex submersible pumps that are rated to pump scum with a proper power supply, piping, valving, and pump controls to make the scum removal robust and failsafe. Permanent and durable (buried) discharge piping should be installed to allow the scum to be pumped to the aeration basin or to the digester via the WAS line (as the operators elect).

(2) Entrance Works Repairs/Upgrades - The facility's entrance works barscreen and grit removal processes have been inoperable for years. Some screening is provided by a manual by-pass bar-rack, but large amounts of coarse debris still pass into the plant daily. The bar-rack must be manually cleaned at least daily, which requires entry into a hazardous confined space (see OdA's 12/6/22 site visit report for additional information). Management of the debris removed from the bar-rack is cumbersome.

The grit removal system consists of a centrifugal grit tank and a passive grit classifier. Neither system has worked well, and the centrifugal grit tank equipment has been non-functional for many years. No grit removal is occurring, so the grit is accumulating in the first section of the aeration basin (racetrack). A facility such as this would typically remove at least 1 - 2 cuft of grit daily so the accumulation resulting from years of not removing grit can be significant, ultimately reducing the volume of the aeration basin.

Barscreen Repair/Upgrade: It would be tempting to simply replace the existing failed barscreen with a similar unit, but this approach would fall far short of addressing the real problems. The barscreen is housed in a deep pit where the sewer interceptor flows into the plant. This pit is a confined space and is not an ideal place to locate automated equipment due to the corrosive environment. It also necessitates a very high lift of the debris once removed. The one advantage of this location is that it precedes that influent liftstation, so coarse debris is removed before the wastewater reaches the influent lift pumps. This helps prevent plugging of the pumps with debris and is generally a good practice. But when the situation necessitates it, influent pumps can handle coarse debris without undue problems (they are effectively doing so now). The corrosive and dangerous nature of the influent pit strongly argues for relocating the screening equipment. The type of screening equipment utilized should also be improved. The original barscreen consists of bars spaced around ½" apart and an automated rake that removes accumulated debris, raises it to ground level, and deposits it into a dumpster for disposal (as solid waste). This type of equipment has been used in wastewater treatment for many years and can

provide reliable screening. However, modern screening equipment utilizes fine screens, closely spaced bars, or perforated plates to capture much more debris and use rotating brushes or fine rakes to remove it. Once removed, the debris is thoroughly washed and compacted to make it suitable for disposal as solid waste. These units, known as ***microstrainers*** and ***finescreens***, remove far more debris, including small plastic products, grease, and other debris that would pass through an old style barscreen. Images of modern screening equipment is shown below:

Package Finescreen/Grit Removal (Questa WWTF)

Barscreen with washer/compactor (Lordsburg WWTF)

Modern Auger-Type Finescreen (Las Vegas WWTF)

(Modern Barscreen, Dona Ana MDWCA District #5 WWTF)

The Lakeside Equipment Corporation makes particularly good finescreens and microstrainers that would be well suited to T or C's application. Their finescreen equipment can be viewed here: https://www.lakeside-equipment.com/product/fine-screen/ , and their microstrainers can be viewed here: https://www.lakeside-equipment.com/product/micro-strainer/ .

Grit Removal Upgrade: The grit removal system has not functioned for years and was somewhat problematic even from the beginning. The system relies upon a circular pit where the wastewater is spun, causing the heavier grit material to accumulate on the outer wall and fall to the bottom of the chamber where it is then removed by a pump as a slurry. The slurry is then discharged onto a vertical perforated plate for classification (where the remaining liquid passes through the plate and returns to the treatment process and the grit is captured and slides down

into a dumpster for storage). Although centrifugal grit separators are relatively common, the vertical perforated plate grit classifier is unusual (the author is unaware of others in New Mexico). Many of the existing centrifugal grit separator units found in the state are undersized for the applied hydraulic flow and therefore do not perform well.

There are three traditional approaches to grit removal: The centrifugal grit separator discussed above, long channel grit chambers which rely on gravity separation/manual cleaning, and aerated grit chambers which use aeration to cause grit to settle due to its higher density. Of these, aerated grit chambers tend to provide the best performance and equipment longevity. Aerated grit chambers also offer the advantage of "freshening" the raw wastewater as it enters the treatment system, often helping to control odors and prepare the wastewater for biological treatment. An example of an aerated grit chamber and typical grit classification equipment can be seen below:

Aerated Grit Chamber (Roswell WWTF)

Grit Classifier (Alamogordo WWTF)

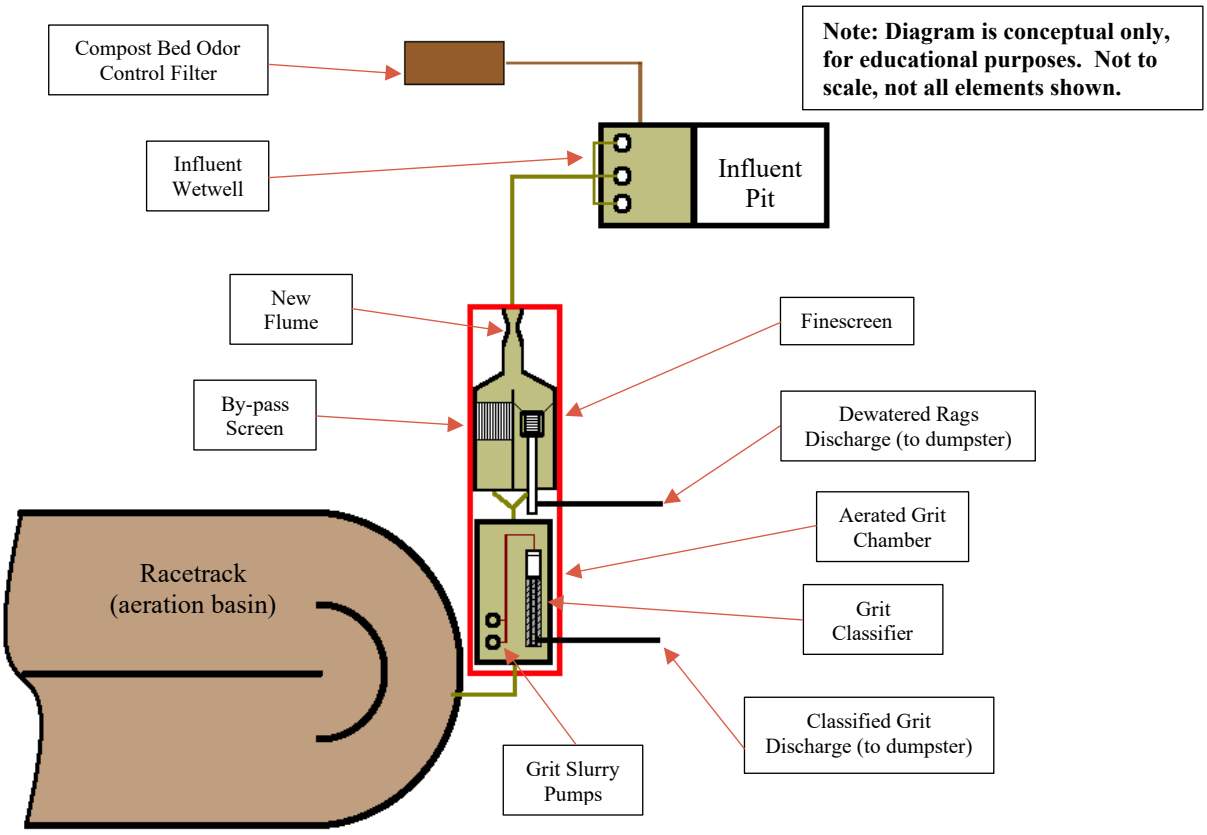
Grit removal is critical to preserving the aeration basin capacity and protecting pumping equipment, but it would not be worthwhile to try to repair the existing equipment and return it to service. Instead, the entire grit removal system should be replaced with a reliable process. An aerated grit chamber with slurry pumps and a grit classifier would be the most likely approach to succeed. There are good package units that combine finescreens with aerated grit chambers/grit classifiers (see the photo of the unit at the Questa WWTF above), and a package approach might work here. Ideally, screening and grit removal equipment should be housed in a building to protect them from harsh weather/sun and control odors. Where possible, the equipment should be located near ground level to make equipment servicing easier and safer.

Odor Control: The T or C WWTF is equipped with an odor control unit that relies upon a sodium hydroxide air scrubber. The system is dilapidated, and the hydroxide recirculation pump has failed. The air fan was turned off during OdA's visit when the hydroxide pump system was found to be non-functional (recirculating air through the non-functional scrubber was providing no treatment and may have even been making odors worse).

A better approach to odor control would be to use a compost filter. In this process, air from the influent wetwell is (similarly) captured by an air recirculator, but instead of a hydroxide scrubber, it is pumped through perforated pipes into a pile of compost. The compost media absorbs the odor causing gases and bacteria in the compost pile break them down biologically. The compost must periodically be changed and in this climate, the pile would need to be routinely wetted, but compost odor control system works well and are simple to maintain (unlike hydroxide scrubbers).

Relocating the Entrance Works: The best approach to addressing all the problems discussed above would be to locate new plant pretreatment processes past the influent liftstation in a consolidated entrance works. This would allow the screening and grit removal equipment to be housed near ground level for safe and easy service. Another advantage would be that an influent flow measuring flume could be installed in the new headworks. The influent flow is currently measured by a mag-meter located on the discharge header for the influent lift pumps. The meter works well and provides good flow measurement. However, due to the large pipe diameter, these units are very costly to replace when they fail. A head sensor on an open channel flume would be an accurate, cost effective, and easy way to provide accurate influent flow measurement (just like the current approach to effluent flow measurement).

An example of how the entrance works could be relocated at the T or C facility is shown below:



(3) WAS Automation – The current wasting approach relies upon manual wasting of solids from the secondary treatment process, where the operators manipulate two valves to direct WAS solids from the pumped RAS line to the aerobic digester. It is unusual to find a treatment facility of this size that relies upon manual wasting, and OdA recommends that the City initiate a project to install an automated wasting system. Such a system would include two automated valves located in a valve vault on the RAS and WAS lines that actuate to waste solids to the digester based upon a timer set by the operators. This project would help ensure that adequate solids wasting occurs and would allow the solids wasting to be optimized so that only the thickest sludge is sent to the digester (preserving digester space). The system would not rely upon an operator to manually waste solids and would work consistently.

(4) Closure/Conversion of Abandoned Structures – There are several abandoned structures at the treatment facility site that need to undergo proper closure or be repurposed. The main structures falling into this category are:

1. The abandoned secondary clarifiers
2. The sand drying beds located at the southwest corner of the WWTF
3. The wedge-wire vacuum drying beds

Abandoned Secondary Clarifiers: The secondary clarifiers have been partially filled in but still need to have the vessels breached so they will no longer contain liquids and then need to be filled/compacted to grade with positive drainage. It may be worth waiting on this project until the outcome of the Entrance Works Repairs/Upgrades have been decided, because there is at least a chance that some or all this work would occur on/near one of the abandoned clarifiers.

Convert Sand Drying Beds: The sand drying beds were originally used to dry sludge from the treatment process but have been (largely) abandoned for years. They were most recently used to receive scum from the clarifier boxes (under recommendations from OdA) to remove this material from the treatment process and dry it for disposal. NMED would like to see these beds properly closed or repurposed.

The City has expressed interest in repurposing the sand drying beds for use as a composting pad. To do so would involve designing and constructing a hard surface pad (most likely concrete) with proper containment, entry/exit ramps, and other features to allow them to safely contain sludge composting activities. It would be important to work with the NMED ground water and solid waste Bureaus to ensure that the new construction would meet regulations (both Bureaus are involved in the regulation of sludge composting activities).

Wedge-wire Drying Beds: Approximately 25 years ago, the City installed two wedge-wire drying beds intended to provide sludge dewatering/drying. The system originally worked but could not keep up with the City's sludge production. Most recently, the wedge-wire beds have been used to receive scum from the clarifier scum box, so they are full of semi-dried solids. At this point, the beds and associated equipment are largely non-functional and should not be used for sludge dewatering, storage, or any other related purpose. Solids accumulated in the bed from

scum discharges should be cleaned out and disposed. It may be possible to convert the beds into compost storage (to compliment converting the sand beds into compost production), so this should be investigated as part of that project. Otherwise, the beds, equipment, and associated building should be properly closed out by removing the equipment, demolishing any remaining structures, breaching the vessels, and regrading/compacting the area with positive drainage.

Critical O&M Repair Activities

The critical O&M repair activities consist of smaller projects that would typically be performed on existing equipment as a part of normal maintenance. These activities are completed by the operators or by a contractor, and there is little (or no) design aspect involved. The four critical O&M repair activities are listed below, in order of priority:

1. Repair of failed aerator/mixers
2. Repair of the influent liftstation pump controls
3. Improved maintenance of the influent liftstation wetwell
4. Replace effluent sampler

Aerator/Mixer Repair – Two of the aeration blower/mixers in the racetrack aeration basin are non-functional. The aerators/mixers are critical to maintaining the microorganism population within the aeration basin which the treatment process relies upon. Dissolved oxygen (DO) checks of the aeration basin during the visit indicated low DO conditions prevail throughout the aerobic zones and maintaining DO will be increasingly difficult with the onset of hot weather during the summer. The City is in the process of replacing one of the aerators (which should remain a high priority) but plans to replace the second unit should begin now and should be budgeted for FY-26 (if it cannot be afforded under the current budget). The installation of the first unit should occur within the next few weeks and the installation of the second unit should be accomplished as quickly as practical.

Influent Liftstation Pump Control Repairs – The influent liftstation pumps are normally controlled by a capacitance probe hanging in the influent wetwell. The pumps operate on variable frequency drives (VFDs) that pace the pumps based upon the rate of rise or fall in the wetwell level. This provides a more constant flow to the aeration basin, rather than delivering the flow in on/off pulses. It also ensures that the pumps undergo "soft" start and stop conditions, which greatly protects the pumps from wear and tear. However, the automated VFD control system has been inoperable for some time, and the system has been limping along using back-up float switches. The advantages of having the VFDs is being lost and the wear and tear on the pumps is increased, so it is important that this system be repaired quickly and returned to normal service. At this point, the operators report that the capacitance probe is not working and the programmable logic computer (PLC) that controls the VFDs must be replaced due to obsolescence.

The presence of large amounts of scum/debris floating on the surface of the wetwell could easily cause a failure of the capacitance probe. In fact, the scum layer is so thick and dense that it could affect the ability of the back-up float switches to control the pumps. Before any repair of the pump control is undertaken, the wetwell should be thoroughly cleaned to remove the scum layer. A vac-truck should be utilized to thoroughly remove the scum layer/debris and then the wetwell should be manually pumped down using the liftstation pumps while the walls, piping, and pumps are hosed down with a heavy spray. Care should be taken not to damage the float switches, which should carefully be lifted to ground level and cleaned using a bucket and brush. Once cleaned, the wetwell should be maintained clean into the future to protect the equipment.

Improved Influent Liftstation Wetwell Maintenance – The influent liftstation contains a remarkable amount of scum and debris. This is partially due to the lack of screening and may also be aggravated when digester decanting is performed (due to large amounts of floating material existing with the digester decant). But it also shows an almost complete lack of standard maintenance. Liftstations should be cleaned at least weekly by netting out any large floating debris and manually pumping all wastewater from the wetwell while spraying the pumps, piping, and walls down. This lack of maintenance has been a long-standing problem for the City of T or C (liftstations located in the collection system have also carried heavy scum blankets). The result has been increased pump repair costs, increased odors, damage to pump control equipment, unnecessary equipment outages, etc. This type of maintenance must be performed consistently and often to avoid allowing a large scum layer to develop because once it does, it is much harder to deal with. The City should begin now by cleaning the liftstation (as described above) and then performing ongoing cleaning at least weekly, or more frequently if necessary. All wetwells contain some floating debris and grease, but the wastewater should always remain visible, and a true scum layer should never be allowed to develop.

Effluent Sample Repair/Replacement – The effluent composite sampler was observed to have failed. This sampler is very important for collecting composite samples and properly storing them (particularly after hours). This sampler should be replaced as soon as practical.

Recommended Equipment Spares

Several critical spare parts should always be maintained available at this treatment facility to ensure that timely repairs can be made without interruption to the treatment process. These include:

1. One spare Aerator/Mixer main motor
2. One spare Aerator/Mixer driven unit (mixer shaft, prop and housing assembly)
3. One full replacement set of UV disinfection unit bulbs, quartz sleeves, and light ballast drive
4. One secondary clarifier drive motor and gearbox
5. All spares needed for routine repairs to the beltpress (polymer make-up unit, spare belts, roller bearings, dampers)

All spares should be maintained on the shelf in an organized and ready to deploy condition. Gearboxes and the like should be stored without lubricating oil to prevent acidification/bearing damage. All critical lubricants should be kept in stock in sealed containers. A full spare parts inventory should be maintained and updated at least annually as the budgeting period approaches.

Conclusion

The City of T or C WWTF needs short and long-term upgrades to keep it functional and maintain compliance. The City will need to begin a series of well-planned actions to address failed equipment and plan for the future. The City should make maintaining a qualified work force a high priority and should adjust its compensation/benefits so that a fully qualified full time operation staff can be achieved.

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Need for Additional Training - OdA recommends that a follow up visit be conducted in approximately 6 - 12 months, and OdA will remain available as a resource for consultation with the operators and the City, as necessary.

Acknowledgement - Robert George with OdA wishes to sincerely thank Jaimie Foreman, Gary Whitehead and the other city staff for their time and interest during the site visit. With Mr. Whitehead's leadership, the City of T or C is on the right path to addressing both its short- and long-term utility issues.

Disclaimer - The views expressed in this report and recommendations set forth are solely the views and recommendations of Mr. George/OdA. Mr. George can be contacted at 1-505-901-7952 or osodelagua@icloud.com. While every effort has been made to ensure that the information contained within this report is accurate, errors and omissions can occur. If you identify an error or omission that significantly impacts the accuracy/validity of this report, please contact OdA to discuss it. If a clear error or omission has occurred, OdA will issue a revised report.

Site Visit Photos:

Photo #1 *Influent Wetwell*

Photo #2 *Hydroxide Pump*

Photo #3 *Dislodged Launder*

Photo #4 *Aeration Basin (note vegetation)*

Photo #5 *Scum Box Sump*

Photo #6 *UV Disinfection Unit*

Photo #7 *Sludge Belt Press*