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**CITY OF PITTSBURG, KANSAS**  
**COMMISSION AGENDA**  
**Tuesday, October 26, 2021**  
**5:30 PM**

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**CALL TO ORDER BY THE MAYOR:**

- a. Flag Salute Led by the Mayor
- b. Public Input

**CONSENT AGENDA:**

- a. Approval of the October 12, 2021, City Commission Meeting minutes.
- b. Approval of Ordinance No. G-1331, providing for the change of certain areas from CP-3, Planned Highway Service Commercial, to IP-2, Planned Medium Industrial, and amending and supplementing the Zoning District Boundary Map and Zoning Ordinance No. G-663, as amended, of the City of Pittsburg, Kansas (Request of Scannell Properties #568, LLC, for the property located on East 400 Highway), and authorize the Mayor to sign the Ordinance on behalf of the City.
- c. Approval of staff recommendation to award the bid for the purchase of a 1,000-Gallon AvGas Refueler mounted on a NEW 2022 1-Ton Chassis-Cab for use at the Atkinson Municipal Airport to Global Aviation Services, LLC dba Pro Flo Industries, of Alvada, Ohio, based on their bid of \$116,495.00, and authorize the issuance of the necessary purchase order.
- d. Approval of staff recommendation to enter into a five-year lease/purchase agreement for an AvGas Refueler vehicle to be used at the Atkinson Municipal Airport, with Commerce Bank (Clayton Holdings), of Pittsburg, Kansas, based on their low annual payments in the amount of \$24,016.53 (annual percentage rate of 1.54%), and authorize the Mayor to sign the necessary lease/purchase agreement once prepared.
- e. Approval of the application submitted by Aaron Frasco and Elizabeth Frasco for water service outside the corporate City Limits to property located at 1061 East 570th Avenue.
- f. Approval of staff request to declare four hundred forty (440) MXU meter transceiver units utilized for drive-by water meter readings as surplus and authorize staff to donate said assets to the City of Pomona, Kansas.
- g. Approval of the Appropriation Ordinance for the period ending October 26, 2021, subject to the release of HUD expenditures when funds are received.

**ROLL CALL VOTE.**

**CITY OF PITTSBURG, KANSAS**  
**COMMISSION AGENDA**  
**Tuesday, October 26, 2021**  
**5:30 PM**

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**SPECIAL PRESENTATIONS:**

- a. USD 250 SCHOOL BOND ISSUE - USD 250 Superintendent Rich Proffitt will provide information regarding the upcoming School Bond Issue. **Receive for file.**
- b. PITTSBURG BEAUTIFUL UPDATE - Members of Pittsburg Beautiful will provide information regarding their current and upcoming projects. **Receive for file.**
- c. BODY WORN CAMERAS - Police Department representatives will provide information regarding the body worn camera purchase initiative. **Receive for file.**

**CONSIDER THE FOLLOWING:**

- a. WASTEWATER TREATMENT PLANT - FLYGT PUMP INSTALLATION AND MODIFICATIONS- Consider staff request to waive the City's bid policy and to accept a proposal submitted by JCI Industries, Inc. to perform repairs to final clarifier no. 1 at the Wastewater Treatment Plant in the amount of \$25,435.00. **Approve or disapprove staff request to waive the City's bid policy to allow for repairs to final clarifier no. 1 at the Wastewater Treatment Plant and approve or disapprove JCI Industries, Inc.'s proposal to perform said repairs.**
- b. WATER TREATMENT PLANT ODOR CONTROL PHASE I STUDY - Olsson and City staff will provide the findings of Phase I of the Water Treatment Plant Odor Control Study. **Receive for file and 1) Approve moving forward with Phase II of the Study as defined within the original agreement with Olsson; 2) Approve utilizing remaining funds previously approved for Phase II and modify for use with a Pilot Study; or, 3) Discontinue the Odor Control Study thus closing out the project with Olsson.**

**NON-AGENDA REPORTS & REQUESTS:**

**ADJOURNMENT**



OFFICIAL MINUTES  
OF THE MEETING OF THE  
GOVERNING BODY OF THE  
CITY OF PITTSBURG, KANSAS  
October 12, 2021

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A Regular Session of the Board of Commissioners was held at 5:30 p.m. on Tuesday, October 12<sup>th</sup>, 2021, in the City Commission Room, located in the Law Enforcement Center, 201 North Pine, with Mayor Chuck Munsell presiding and the following members present: Cheryl Brooks, Larry Fields, Dawn McNay, and Patrick O'Bryan.

Mayor Munsell led the flag salute.

PUBLIC INPUT - INVOCATION – Linda Stotler, on behalf of the Grace United Methodist Church, provided an invocation.

CRIMINAL ACTIVITY - Ashley Bohn-Witt, owner of 602 North Joplin, expressed concern regarding criminal activity in Pittsburg.

APPROVAL OF MINUTES – On motion of O'Bryan, seconded by Brooks, the Governing Body approved the September 28<sup>th</sup>, 2021, City Commission Meeting minutes as presented. Motion carried.

MILLER STREET VACATION ORDER – On motion of O'Bryan, seconded by Brooks, the Governing Body approved the Order vacating a portion of Miller Drive between South Joplin Street and South English Street submitted by Hometown Development Group, LLC., and authorized the Mayor to sign the Order on behalf of the City. Motion carried.

APPROPRIATION ORDINANCE – On motion of O'Bryan, seconded by Brooks, the Governing Body approved the Appropriation Ordinance for the period ending October 12<sup>th</sup>, 2021, subject to the release of HUD expenditures when funds are received with the following roll call vote: Yea: Brooks, Fields, McNay, Munsell and O'Bryan. Motion carried.

ORDINANCE NO. G-1329 – On motion of Brooks, seconded by McNay, the Governing Body approved Ordinance No. G-1329, amending Section 78-31 of the Code of the City of Pittsburg, Kansas, and providing for the protection of public health, property, and safety, and the regulation of traffic by adopting by reference the 2021 Edition of the "Standard Traffic Ordinance for Kansas Cities" as published by The League of Kansas Municipalities, save and except such parts or portions as supplemented, deleted or changed and repealing Ordinance No. G-1315, and authorized the Mayor to sign the Ordinance on behalf of the City. Motion carried.

ORDINANCE NO. G-1330 – On motion of Brooks, seconded by Fields, the Governing Body approved Ordinance No. G-1330, amending Section 54-41 of the Code of the City of Pittsburg, Kansas, regulating certain public offenses within the corporate limits of the City of Pittsburg, Kansas, by adopting by reference the 2021 Edition of the "Uniform Public Offense Code for Kansas Cities" as published by The League of Kansas Municipalities, save and except such parts or portions as supplemented, deleted or changed; and repealing Ordinance No. G-1316, and authorized the Mayor to sign the Ordinance on behalf of the City. Motion carried.

OFFICIAL MINUTES  
OF THE MEETING OF THE  
GOVERNING BODY OF THE  
CITY OF PITTSBURG, KANSAS  
October 12, 2021

---

CHANGE ORDER NO. 3 – GEORGIA STREET CHANNEL/CULVERT PROJECT On motion of Brooks, seconded by McNay, the Governing Body approved Change Order No. 3 to the contract with Heck and Wicker for the Georgia Street Channel/Culvert Project reflecting an increase of \$3,820.00, making the overall contract construction amount \$456,650.71, and authorized the Mayor to sign the Change Order on behalf of the City. Motion carried.

CHANGE ORDER NO. 4 – GEORGIA STREET CHANNEL/CULVERT PROJECT – On motion of Brooks, seconded by O'Bryan, the Governing Body approved Change Order No. 4 to the contract with Heck and Wicker for the Georgia Street Channel/Culvert Project reflecting an increase of \$13,235.76, making the overall contract construction amount \$469,886.47, and authorized the Mayor to sign the Change Order on behalf of the City. Motion carried.

CHANGE ORDER NO. 5 – GEORGIA STREET CHANNEL/CULVERT PROJECT – On motion of Brooks, seconded by O'Bryan, the Governing Body approved Change Order No. 5 to the contract with Heck and Wicker for the Georgia Street Channel/Culvert Project reflecting an increase of \$3,256.69, making the overall contract construction amount \$473,143.16, and authorized the Mayor to sign the Change Order on behalf of the City. Motion carried.

COPY MACHINE LEASE SUPPLEMENTS – On motion of Munsell, seconded by Fields, the Governing Body approved Supplements to the City's copy machine agreements with Copy Products, Inc., for the renewal of the City's copier leases and services contracts, in the amount of \$1,276.00 per month for sixty months for City equipment and \$97.00 per month for sixty months for equipment located at the Pittsburg Public Library, and authorized the Mayor to sign the Supplements on behalf of the City. Motion carried.

SPECIAL PRESENTATION - CHILDCARE NEEDS ASSESSMENT - Dawn Flores, on behalf of Greenbush, and Ann Elliott, on behalf of The Family Resource Center, presented the findings of the Childcare Needs Assessment.

CITY-WIDE BULKY ITEM PICK-UP PROGRAM – Director of Public Utilities Matt Bacon provided information regarding the City-wide bulky-item pick-up program scheduled for October 23<sup>rd</sup>, 2021.

CHANGE OF ZONING – 770 EAST 400 HIGHWAY – On motion of O'Bryan, seconded by Fields, the Governing Body approved the recommendation of the Planning Commission/Board of Zoning Appeals to grant the request submitted by Scannell Properties #568, LLC, to change the zoning of certain areas, located at 770 East 400 Highway, from CP-3, Planned Highway Service Commercial, to IP-2, Planned Medium Industrial, and directed staff to prepare the necessary Ordinance. Motion carried.

VARIANCE - 603 THOMAS – On motion of Fields, seconded by Brooks, the Governing Body approved the recommendation of the Planning Commission/Board of Zoning Appeals to grant a Variance at 603 Thomas, submitted by Matthew Curran, to construct a 30'x40' detached garage. Motion carried.

OFFICIAL MINUTES  
OF THE MEETING OF THE  
GOVERNING BODY OF THE  
CITY OF PITTSBURG, KANSAS  
October 12, 2021

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PARTIAL MORTGAGE RELEASE - SILVERBACK HOUSING DEVELOPMENT – On motion of O'Bryan, seconded by Fields, the Governing Body approved a Partial Release of Mortgage document for Lot Number 13 (1823 Silverback Way), located in the Silverback housing development, as GN Bank, the primary lender for the project, took first position on the loan, with the City securing a second position on the P & L property until the loan is repaid in December 2023, and authorized the Mayor to sign the Partial Release of Mortgage document on behalf of the City. Motion carried.

PARTIAL MORTGAGE RELEASES AND WAIVERS OF RIGHT OF REPURCHASE - SILVERBACK HOUSING DEVELOPMENT – On motion of O'Bryan, seconded by McNay, the Governing Body approved Partial Release of Mortgage documents and Waivers of Right of Repurchase for Lot Number 7, Lot Number 9, and Lot Number 14 in Silverback Landing, located in the Silverback housing development, as Arvest Bank, the primary lender for the project, took first position on the loan, with the City securing a second position on the P & L property until the loan is repaid in December 2023, and authorized the Mayor to sign the Partial Release of Mortgage documents and Waivers of Right of Repurchase on behalf of the City. Motion carried.

2021 AUDITING CONTRACT – On motion of McNay, seconded by Fields, the Governing Body authorized staff to engage the firm of Berberich Trahan & Company P.A. for the fiscal year 2021 City audit at a cost of \$40,000, and authorized the Mayor to sign the appropriate documents on behalf of the City. Motion carried.

BIRTHDAY WISHES – The Governing Body wished Director of Finance Larissa Bowman a Happy Birthday.

CITYWORKS – AZTECA SYSTEMS, LLC - SOFTWARE LICENSE AND MAINTENANCE AGREEMENT – On motion of McNay, seconded by Brooks, the Governing Body approved staff recommendation to enter into a Software License and Maintenance Agreement with Azteca Systems, LLC, ("Azteca Systems" or "Azteca") a Delaware limited liability company, for the purchase of Cityworks PLL software to support permitting, licensing and inspections staff and processes, in the amount of \$42,000 per year, and authorized the Mayor to sign the Software License and Maintenance Agreement on behalf of the City. Motion carried.

NEWEDGE SERVICES, LLC – MASTER AGREEMENT FOR MATERIAL AND SERVICES – On motion of O'Bryan, seconded by Brooks, the Governing Body approved staff recommendation to enter into a Master Agreement for Material and Services with NewEdge Services, LLC, ("NewEdge") for the implementation of Cityworks PLL software to support permitting, licensing and inspections staff and processes, in the amount of \$85,800, and authorized the Mayor to sign the Master Agreement for Material and Services on behalf of the City. Motion carried.

OFFICIAL MINUTES  
OF THE MEETING OF THE  
GOVERNING BODY OF THE  
CITY OF PITTSBURG, KANSAS  
October 12, 2021

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CITY MANAGER'S ANNUAL EVALUATION/GOALS – On motion of O'Bryan, seconded by Brooks, the Governing Body adopted a formal procedure regarding the City Manager's annual performance evaluation and review of Letter Agreement. Motion carried.

It was the consensus of the Governing Body to change Procedure #3 to read "The Commissioners will return the completed evaluation tool to the City Attorney no later than three days prior to the Commission meeting scheduled to review the evaluation".

NON-AGENDA REPORTS & REQUESTS:

3004 ROTARY TERRACE - ROLLSOURCE BUILDING – City Manager Daron Hall announced that the City plans to place the building located in the Northeast Industrial Park, at 3004 Rotary Terrace, formerly occupied by Rollsource, for sale by sealed bid.

SALARY STUDY – Mayor Munsell requested the status of the Salary Study. City Manager Daron Hall stated that the study results are currently being reviewed. A discussion was held regarding employee compensation.

ADJOURNMENT: On motion of McNay, seconded by O'Bryan, the Governing Body adjourned the meeting at 7:02 p.m. Motion carried.

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Chuck Munsell, Mayor

ATTEST:

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Tammy Nagel, City Clerk

(Published in The Morning Sun on October 29, 2021)

**ORDINANCE NO. G-1331**

AN ORDINANCE, providing for the change of certain areas from CP-3, Planned Highway Service Commercial, to IP-2, Planned Medium Industrial, and amending and supplementing the Zoning District Boundary Map and Zoning Ordinance No. G-663, as amended, of the City of Pittsburg.

WHEREAS, the Planning and Zoning Commission of the City of Pittsburg, Kansas, has filed their report with the Board of Commissioners of the City of Pittsburg, Kansas, recommending amendment of said Ordinance related to area and use zoning and amendment of the Zoning District Boundary Map.

NOW, THEREFORE, BE IT ORDAINED BY THE GOVERNING BODY OF THE CITY OF PITTSBURG, KANSAS:

Section 1: That the Planned Medium Industrial (IP-2), as defined by the Zoning Ordinance, is hereby amended and supplemented to include the following described real estate in the City of Pittsburg, Crawford County, Kansas, to-wit:

All that part of Lots 1 and 3, Kansas Crossing Subdivision, a subdivision of record in Crawford County, Kansas, being more particularly described as follows: (the basis of bearing for the following real property description is Kansas State Plane, South Zone, NAD 83, as show on the recorded plat of Kansas Crossing Subdivision and this description was prepared by Samuel J. DePriest, KS PLS 1351 on August 19, 2021); beginning at the northwest corner of said Lot 3; thence North 88 degrees 21 minutes 43 seconds East, with the north line of said Lots 3 and 1, a distance of 952.38 feet; thence south 01 degree 38 minutes 17 seconds East, perpendicular to the north line of said Lot 1, a distance of 1746.58 feet; thence South 88 degrees 21 minutes 43 seconds West, a distance of 548.42 feet; thence North 01 degree 38 minutes 17 seconds West, a distance of 134.99 feet; thence South 87 degrees 56 minutes 05 seconds West, a distance of 391.93 feet to a point on the west line of aforesaid Lot 3; thence North 02 degrees 03 minutes 55 seconds West, with the west line of said Lot 3, a distance of 1614.56 feet to the point of beginning. The above described tract contains 1,599,765 square feet, or 36.73 acres.

Section 2: That Zoning Ordinance No. G-663, as amended, including the Zoning District Boundary Map adopted on May 28, 1991, and periodically revised, is hereby amended and supplemented to include the area and use as set out in the preceding section.

Section 3: This Ordinance shall take effect and be in force from and after its passage and publication in the official City newspaper.

ADOPTED AND APPROVED by the Governing Body on this 26<sup>th</sup> day of October, 2021.

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Mayor – Chuck Munsell

ATTEST:

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City Clerk – Tammy Nagel

(SEAL)

## Interoffice Memorandum

**TO:** DARON HALL  
City Manager

**FROM:** MATT BACON  
Director of Public Works & Utilities

**DATE:** October 19, 2021

**SUBJECT:** Agenda Item – October 26, 2021  
Disposition of Bids  
Av-Gas Refueler Mounted on NEW 2022 1-Ton Chassis-Cab

---

Bids were received on Tuesday, October 5, 2021 for the purchase of a 750-gallon AvGas refueler mounted on one (1) NEW 2022 1-Ton Chassis-Cab (see attached bid tab sheet) . The City solicited two (2) vendors who specialize in this type of equipment, but only one (1) bid was received. The lone bid was received from Global Aviation Services, LLC dba Pro Flo Industries, of Alvada, Ohio, with a bid of \$116,495.00. In lieu of bidding a 750-gallon AvGas refueler as specified, they provided a value adder for a 1,000-gallon AvGas refueler. After reviewing the bid for conformance to specifications, City staff is recommending award of the bid to Global Aviation Services, LLC dba Pro Flo Industries based on their bid of \$116,495.00. The City is requesting financing of this equipment through a lease/purchase.

In this regard, would you please place this item on the agenda for the City Commission meeting scheduled for Tuesday, October 26, 2021. Action necessary will be approval or disapproval of staff's recommendation and, if approved, authorize the issuance of the necessary purchase order. Funding is being paid through a lease/purchase agreement with funds allocated in State Sales Tax Capital Outlay.

If you have any questions concerning this matter, please do not hesitate to contact m

Attachment: Bid Tab Sheet



**The City of Pittsburg, Kansas**  
**Recapitulation of Bids for Purchase of Airport Refueler Truck**  
**Tuesday, October 5, 2021 - 2:00 p.m.**

Name & Address of Bidder	Total Bid
Global Aviation Services, LLC dba Pro Flo Industries 2679 South US 23 Alvada, Ohio 44802	\$116,495.00



## Interoffice Memorandum

**TO:** DARON HALL  
City Manager

**FROM:** MATT BACON  
Director of Public Works & Utilities

**DATE:** October 19, 2021

**SUBJECT:** Agenda Item – October 26, 2021  
Airport Refueler Leasing

---

The City of Pittsburg recently placed an advertisement in the newspaper and sent out RFQ's to seek quotes from financial institutions for the financing of a 1,000-gallon AvGas refueler mounted on a New 2022 Ford F350/F450 4 x 2 Chassis for use at the Atkinson Municipal Airport. The specifics of the purchase are as follows:

- Total Contract Price of \$116,495.00 (see attached Estimate for standard equipment descriptions).
  - 1000-Gallon AvGas Refueler mounted on New 2022 Ford F350/F450 4 x 2 Chassis - \$112,995.00.
  - Shipping - \$3,500.00
- Quotes shall include these lease options:
  - 5 year lease / purchase
  - 5 annual payments, first at delivery of equipment
- Quotes shall include the annual payment amount, payment schedule, and interest rate.
- Quotes shall include the bidders lease purchase agreement which will be subject to the provisions of KSA 10-1116b and KSA 10-1116c and the City of Pittsburg's purchasing policy.
- All quotes shall be viable for a minimum of 30-days from submission.

RFQ's were sent out to 12 local financial institutions. A total of 6 quotes were received in response to the request (see attached RFQ acknowledgement sheet).

**MEMO TO: DARON HALL**  
**OCTOBER 19, 2021**  
**PAGE TWO**

City staff has evaluated the quotes received and is requesting Governing Body approval to purchase the equipment in the amount of \$116,495.00 and to enter into a five-year lease/purchase agreement with Commerce Bank (Clayton Holdings), of Pittsburg, based on their low annual payments in the amount of \$24,016.53 with an annual percentage rate of 1.54%.

Would you please place this item on the agenda for the City Commission meeting scheduled for Tuesday, October 26, 2021. Action necessary will be approval or disapproval of the equipment leasing proposal submitted by Commerce Bank (Clayton Holdings) and, if approved, authorize the Mayor to sign the necessary lease/purchase agreement once prepared.

If you have any questions concerning this matter, please do not hesitate to contact me.

Attachment: RFQ Acknowledgement Sheet



**Acknowledgement of Quotes Received  
Purchase of 1000-Gallon AvGas Refueler  
Mounted on New 2022 Ford F350/F450 4 x 2 Chassis  
Atkinson Municipal Airport  
Tuesday, October 19, 2021 – 2:00 p.m.**

NAME/ADDRESS OF BIDDER	PERCENTAGE RATE /ANNUAL PAYMENT
Arvest Bank 2313 South Rouse Pittsburg, Kansas 66762	2.45% \$24,453.21
Commerce Bank / Clayton Holdings, LLC 100 S. Broadway, PO Box 326 / 8000 Forsyth Blvd. Pittsburg, Kansas 66762 / St. Louis, Missouri 63105-1797	1.54% \$24,016.53
Community National Bank & Trust 401 E. Centennial, PO Box 1186 Pittsburg, Kansas 66762	1.56% \$24,025.85
GNBank 1206 S. Broadway, PO Box 1418 Pittsburg, Kansas 66762	1.98% \$24,236.11
Labette Bank 801 South Broadway Pittsburg, Kansas 66762	2.47% \$24,449.44
US Bank 306 North Broadway Pittsburg, Kansas 66762	1.71% \$24,096.54

## Interoffice Memorandum

**TO:** DARON HALL  
City Manager

**FROM:** MATT BACON  
Director of Public Works & Utilities

**DATE:** October 19, 2021

**SUBJECT:** Agenda Item – October 26, 2021  
Application for Outside Water Service

---

The City of Pittsburg has received an application for water service outside the corporate City limits. Aaron and Elizabeth Frasco are requesting connection of water service to their property located at 1061 East 570<sup>th</sup> Avenue. This property is located approximately ½ mile east of the intersection of East 570<sup>th</sup> Avenue (or Atkinson Road) and North Free King Hwy. Water service is available to this area along East 570<sup>th</sup> Avenue and currently serves multiple houses in this location.

Would you please place this item on the agenda for the City Commission meeting scheduled for Tuesday, October 26, 2021. Action necessary will be approval or disapproval of the application for water service.

If you have any questions concerning this matter, please do not hesitate to contact me.

Attachments: Application for Water Service Outside the City Corporate Limits

APPLICATION FOR WATER SERVICE OUTSIDE THE CITY OF PITTSBURG, KS CORPORATE LIMITS

PROPERTY OWNER(S) Aaron & Elizabeth Frasco DATE 10-18-21  
TELEPHONE 214-551-0267 CURRENT ADDRESS 1063 E. 57th Ave Pittsburg,  
KS

The undersigned owners hereby request water service to the following real estate:

Physical address: 1061 E. 57th Ave. Pittsburg, KS 66062

Legal description of property:

See attached description

As a prerequisite to the right to receive and to continue to receive water from the Pittsburg water system, the undersigned owners agree to the following:

1. To abide by and be subject to all ordinances, rules, and regulations pertaining to the delivery and use of water supplied by the City of Pittsburg.
2. To plat the above described real estate, or if in the opinion of the Governing Body said real estate cannot be properly platted until other adjacent areas are also platted, to execute an "Agreement to Plat", and to plat the above described real estate upon the written request of the Governing Body.
3. I hereby give consent to annexation of the above described real estate to the City of Pittsburg at the convenience of the Governing Body of the City of Pittsburg. This consent shall be binding upon the executors, administrators, grantees, heirs, trustees, successors, receivers, and assigns of the parties.
4. The agreements herein shall be deemed covenants running with the land and will be filed on record with the office of the Register of Deeds, Crawford County, Kansas.

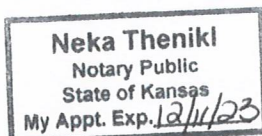
Property Owners

Elizabeth Frasco Elizabeth Frasco  
Aaron Frasco Aaron Frasco

STATE OF KANSAS)  
SS  
CRAWFORD COUNTY)

BE IT REMEMBERED, that on this 18<sup>th</sup> day of October, A.D., 2021, before me, the undersigned, a Notary Public, in and for the County and State afore-said, came Elizabeth Frasco and Aaron Frasco, who are personally known to me to be the same persons who executed the foregoing instrument and duly acknowledge the execution of the same.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my Notarial Seal on the day and year last above written.



Neka Thenikl  
Notary Public - Neka Thenikl

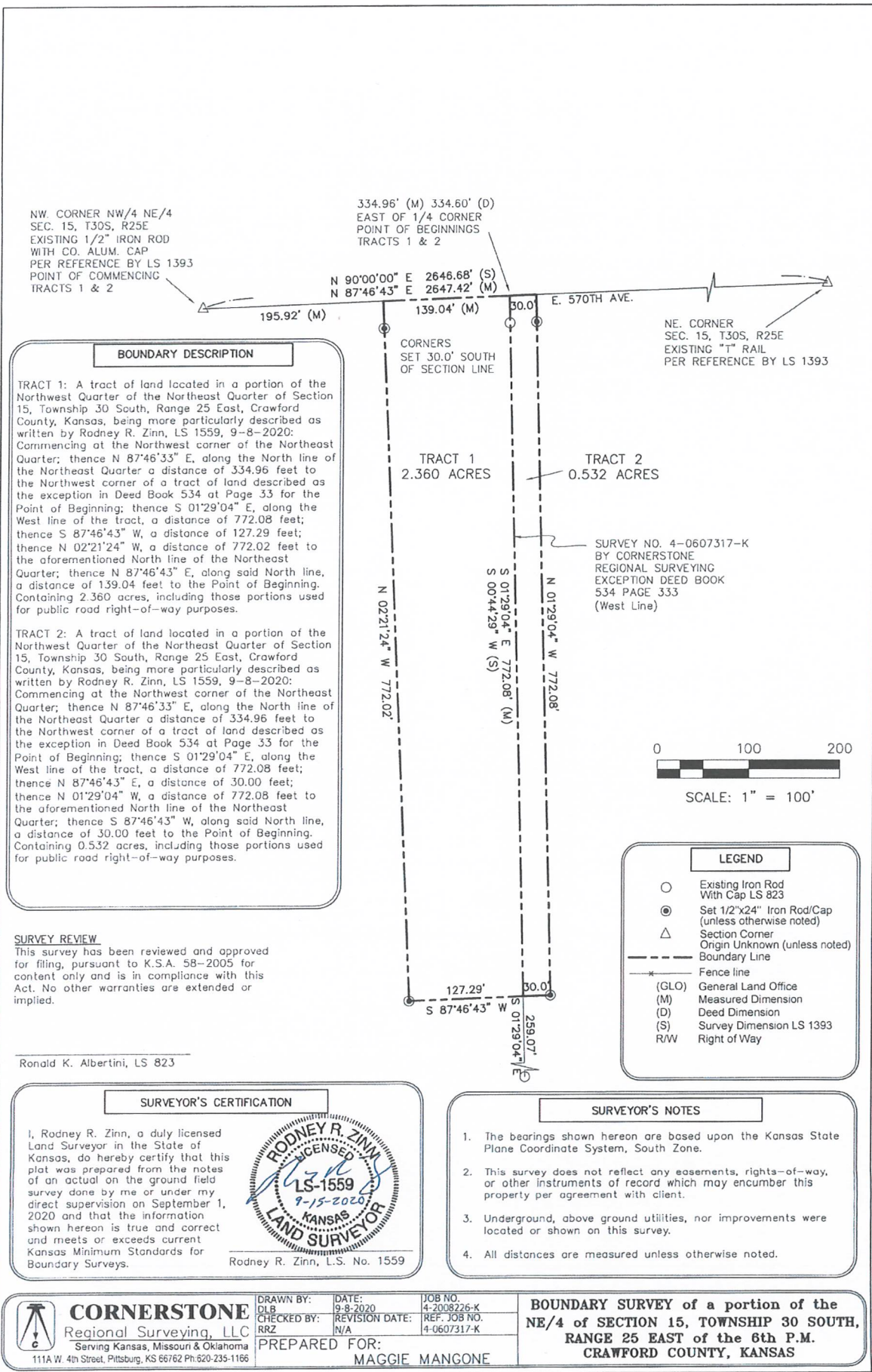
(Seal)  
My commission expires:

Recording fee paid and  
County zoning permit received \_\_\_\_\_  
(Date paid) (Amount)

TRACT 1: A tract of land located in a portion of the Northwest Quarter of the Northeast Quarter of Section 15, Township 30 South, Range 25 East, Crawford County, Kansas, being more particularly described as written by Rodney R. Zinn, LS 1559, 9-8-2020: Commencing at the Northwest corner of the Northeast Quarter; thence N 87°46'33" E, along the North line of the Northeast Quarter a distance of 334.96 feet to the Northwest corner of a tract of land described as the exception in Deed Book 534 at Page 33 for the Point of Beginning; thence S 01°29'04" E, along the West line of the tract, a distance of 772.08 feet; thence S 87°46'43" W, a distance of 127.29 feet; thence N 02°21'24" W, a distance of 772.02 feet to the aforementioned North line of the Northeast Quarter; thence N 87°46'43" E, along said North line, a distance of 139.04 feet to the Point of Beginning. Containing 2.360 acres, including those portions used for public road right-of-way purposes.

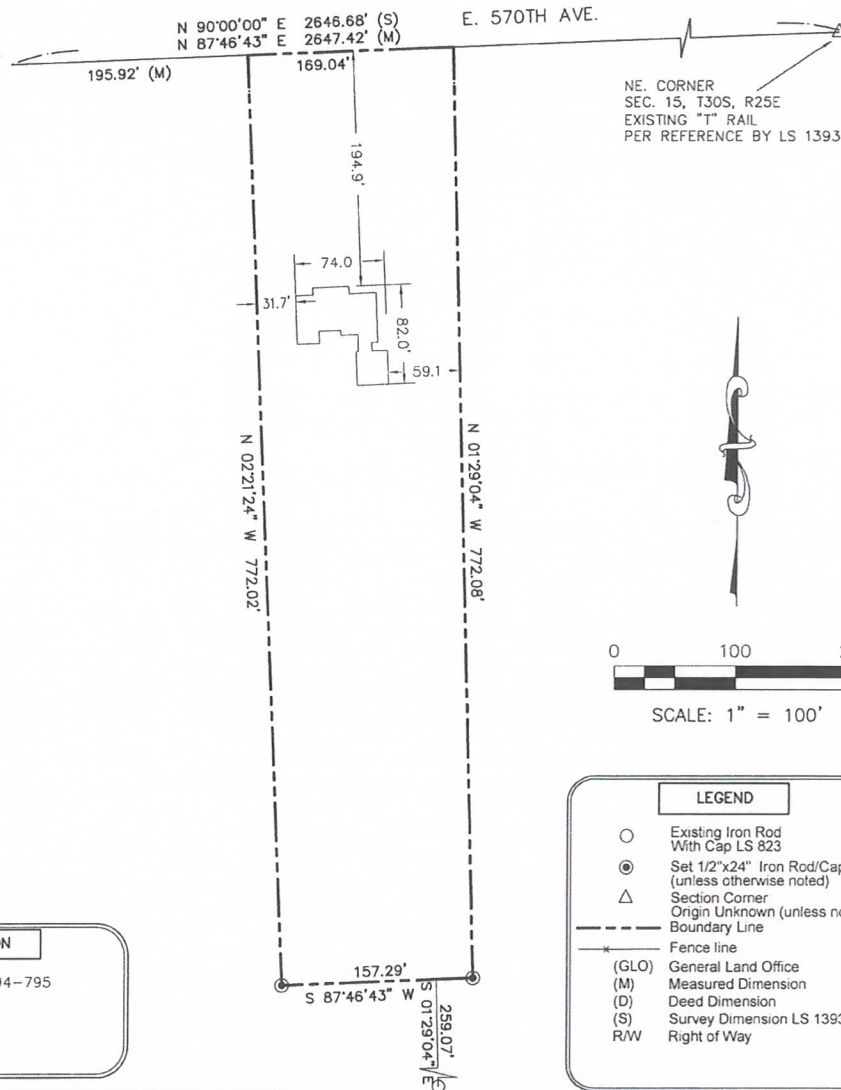
TRACT 2: A tract of land located in a portion of the Northwest Quarter of the Northeast Quarter of Section 15, Township 30 South, Range 25 East, Crawford County, Kansas, being more particularly described as written by Rodney R. Zinn, LS 1559, 9-8-2020: Commencing at the Northwest corner of the Northeast Quarter; thence N 87°46'33" E, along the North line of the Northeast Quarter a distance of 334.96 feet to the Northwest corner of a tract of land described as the exception in Deed Book 534 at Page 33 for the Point of Beginning; thence S 01°29'04" E, along the West line of the tract, a distance of 772.08 feet; thence N 87°46'43" E, a distance of 30.00 feet; thence N 01°29'04" W, a distance of 772.08 feet to the aforementioned North line of the Northeast Quarter; thence S 87°46'43" W, along said North line, a distance of 30.00 feet to the Point of Beginning. Containing 0.532 acres, including those portions used for public road right-of-way purposes.





1061 E 570TH AVE  
PITTSBURG, KANSAS 66762

NW CORNER NW/4 NE/4  
SEC. 15, T30S, R25E  
EXISTING 1/2" IRON ROD  
WITH CO. ALUM. CAP  
PER REFERENCE BY LS 1393  
POINT OF COMMENCING  
TRACTS 1 & 2



#### DEED DESCRIPTION

Per Book 645 Page 794-795

#### SURVEYOR'S CERTIFICATION

I, Rodney R. Zinn, a duly licensed Land Surveyor in the State of Kansas, do hereby certify that this plat was prepared from the notes of an actual on the ground field survey done by me or under my direct supervision on May 11, 2021 and that the information shown hereon is true and correct to the best of my knowledge.



Rodney R. Zinn, L.S. No. 1559

#### SURVEYOR'S NOTES

1. The bearings shown hereon are based upon the Kansas State Plane Coordinate System, South Zone.
2. This survey does not reflect any easements, rights-of-way, or other instruments of record which may encumber this property per agreement with client.
3. Underground, above ground utilities, nor improvements were located or shown on this survey.
4. All distances are measured unless otherwise noted.



**CORNERSTONE**  
Regional Surveying, LLC  
Serving Kansas, Missouri & Oklahoma  
111A W. 4th Street, Pittsburg, KS 66762 Ph: 620-235-1166

DRAWN BY: DLB  
CHECKED BY: RRZ  
DATE: 5-11-2021  
REVISION DATE: N/A  
JOB NO. 4-2008226-K  
REF. JOB NO. 4-0607317-K  
PREPARED FOR:  
AARON and ELIZABETH FRASCO

**FOUNDATION SURVEY of a portion of the  
NE/4 of SECTION 15, TOWNSHIP 30 SOUTH,  
RANGE 25 EAST of the 6th P.M.  
CRAWFORD COUNTY, KANSAS**







## Interoffice Memorandum

**TO:** DARON HALL  
City Manager

**FROM:** MATT BACON  
Director of Public Works & Utilities

**DATE:** October 19, 2021

**SUBJECT:** Agenda Item – October 26, 2021  
Surplus Property

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The City staff is requesting Governing Body action to declare a quantity of 440 MXU meter transceiver units utilized for drive by water meter readings as surplus and to donate said units to the City of Pomona, Kansas. The City no longer utilizes this style of meter readers.

Would you please place this item on the agenda for the City Commission meeting scheduled for Tuesday, October 26, 2021. Action being requested is for the Governing Body to declare the listed assets as surplus and to give permission to City staff to donate them to the City of Pomona, Kansas.

If you have any questions concerning this matter, please do not hesitate to contact me.

VENDOR SET: 99 City of Pittsburg, KS

BANK: \* ALL BANKS

DATE RANGE:10/06/2021 THRU 10/19/2021

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
C-CHECK	VOID CHECK	V	10/08/2021			189880		
C-CHECK	VOID CHECK	V	10/08/2021			189881		
C-CHECK	VOID CHECK	V	10/08/2021			189903		
C-CHECK	VOID CHECK	V	10/08/2021			189904		
C-CHECK	VOID CHECK	V	10/15/2021			189942		
C-CHECK	VOID CHECK	V	10/15/2021			189943		
C-CHECK	VOID CHECK	V	10/15/2021			189944		

## \* \* T O T A L S \* \*

NO

INVOICE AMOUNT

DISCOUNTS

CHECK AMOUNT

REGULAR CHECKS:

0

0.00

0.00

0.00

HAND CHECKS:

0

0.00

0.00

0.00

DRAFTS:

0

0.00

0.00

0.00

EFT:

0

0.00

0.00

0.00

NON CHECKS:

0

0.00

0.00

0.00

VOID CHECKS:

7 VOID DEBITS

0.00

VOID CREDITS

0.00

0.00

0.00

TOTAL ERRORS: 0

NO

INVOICE AMOUNT

DISCOUNTS

CHECK AMOUNT

VENDOR SET: 99 BANK: \* TOTALS:

7

0.00

0.00

0.00

BANK: \* TOTALS:

7

0.00

0.00

0.00

VENDOR SET: 99 City of Pittsburg, KS

BANK: 80144 BMO HARRIS BANK

DATE RANGE:10/06/2021 THRU 10/19/2021

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
0224	KDOR	D	10/06/2021			000000		11,589.60
0321	KP&F	D	10/15/2021			000000		47,155.32
0728	ICMA	D	10/15/2021			000000		772.50
1050	KPERS	D	10/15/2021			000000		39,033.95
6415	GREAT WEST TANDEM KPERS 457	D	10/15/2021			000000		4,232.00
6952	ADP INC	D	10/15/2021			000000		8,509.82
7290	DELTA DENTAL OF KANSAS INC	D	10/08/2021			000000		3,641.90
7290	DELTA DENTAL OF KANSAS INC	D	10/15/2021			000000		3,235.10
7877	TRUSTMARK HEALTH BENEFITS INC	D	10/07/2021			000000		16,497.13
7877	TRUSTMARK HEALTH BENEFITS INC	D	10/14/2021			000000		21,588.34
8370	WEX HEALTH, INC.	D	10/15/2021			000000		5,023.28
2004	AIRE-MASTER OF AMERICA, INC.	E	10/12/2021			013145		17.22
6524	ELLIOTT EQUIPMENT COMPANY	E	10/12/2021			013146		325.50
6528	GALE GROUP/CENGAGE	E	10/12/2021			013147		175.93
6740	ED M FELD EQUIPMENT COMPANY, I	E	10/12/2021			013148		630.50
8400	TK ELEVATOR CORPORATION	E	10/12/2021			013149		3,747.36
8496	PATRIOT3, INC	E	10/12/2021			013150		2,429.06
0046	ETTINGERS OFFICE SUPPLY	E	10/12/2021			013151		556.72
0054	JOPLIN SUPPLY COMPANY	E	10/12/2021			013152		8,748.61
0055	JOHN'S SPORT CENTER, INC.	E	10/12/2021			013153		386.99
0087	FORMS ONE, LLC	E	10/12/2021			013154		256.03
0101	BUG-A-WAY INC	E	10/12/2021			013155		60.00

VENDOR SET: 99 City of Pittsburg, KS

BANK: 80144 BMO HARRIS BANK

DATE RANGE:10/06/2021 THRU 10/19/2021

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
0105	PITTSBURG AUTOMOTIVE	E	10/12/2021			013156		486.32
0112	MARRONES INC	E	10/12/2021			013157		127.12
0133	JIM RADELL CONSTRUCTION COMPAN	E	10/12/2021			013158		4,390.00
0142	HECKERT CONSTRUCTION CO INC	E	10/12/2021			013159		2,842.36
0181	INGRAM LIBRARY SERVICES	E	10/12/2021			013160		24.56
0194	KANSAS STATE TREASURER	E	10/12/2021			013161		1,888.50
0286	R & R PRODUCTS INC	E	10/12/2021			013162		356.55
0294	COPY PRODUCTS, INC.	E	10/12/2021			013163		131.65
0312	HACH COMPANY, INC	E	10/12/2021			013164		2,218.00
0328	KANSAS ONE-CALL SYSTEM, INC	E	10/12/2021			013165		375.60
0335	CUSTOM AWARDS, LLC	E	10/12/2021			013166		180.93
0507	SOUTHEAST KANSAS REGIONAL PLAN	E	10/12/2021			013167		1,776.00
0516	AMERICAN CONCRETE CO INC	E	10/12/2021			013168		668.65
0534	TYLER TECHNOLOGIES INC	E	10/12/2021			013169		13,656.25
0746	CDL ELECTRIC COMPANY INC	E	10/12/2021			013170		1,114.10
0829	CROWN PRODUCTS INC	E	10/12/2021			013171		236.41
0866	AVFUEL CORPORATION	E	10/12/2021			013172		21,989.19
1478	KANSASLAND TIRE #1828	E	10/12/2021			013173		1,241.29
1767	KIM VOGEL	E	10/12/2021			013174		684.23
1792	B&L WATERWORKS SUPPLY, LLC	E	10/12/2021			013175		3,951.19
2005	GALLS PARENT HOLDINGS, LLC	E	10/12/2021			013176		132.44
2025	SOUTHERN UNIFORM & EQUIPMENT L	E	10/12/2021			013177		2,021.72

VENDOR SET: 99 City of Pittsburgh, KS

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DATE RANGE:10/06/2021 THRU 10/19/2021

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
2035	O'BRIEN ROCK CO., INC.	E	10/12/2021			013178		523.01
2186	PRODUCERS COOPERATIVE ASSOCIAT	E	10/12/2021			013179		2,185.04
2707	THE LAWNSCAPE COMPANY, INC.	E	10/12/2021			013180		189.50
2921	DATAPROSE LLC	E	10/12/2021			013181		4,919.13
4059	PSU - PRINTING & DESIGN SERVI	E	10/12/2021			013182		110.14
4307	HENRY KRAFT, INC.	E	10/12/2021			013183		81.07
4452	RYAN INSURANCE, LLC	E	10/12/2021			013184		293.00
4618	TRESA LYNNE MILLER	E	10/12/2021			013185		1,022.50
5049	CRH COFFEE INC	E	10/12/2021			013186		45.90
5236	SHOWCASES	E	10/12/2021			013187		222.91
5482	JUSTIN HART	E	10/12/2021			013188		70.00
6175	HENRY C MENGHINI	E	10/12/2021			013189		1,898.70
6822	ELIZABETH BRADSHAW	E	10/12/2021			013190		940.34
6936	HAWKINS INC	E	10/12/2021			013191		739.94
6995	SUMMER WARREN	E	10/12/2021			013192		380.00
7240	JAY HATFIELD CERTIFIED USED CA	E	10/12/2021			013193		1,258.29
7427	OLSSON INC	E	10/12/2021			013194		2,379.00
7852	TRIA HEALTH, LLC	E	10/12/2021			013195		1,414.55
8046	CONVERGEONE, INC.	E	10/12/2021			013196		122.50
8147	CHEM-AQUA, INC.	E	10/12/2021			013197		814.42
8200	PLUNKETT'S PEST CONTROL INC	E	10/12/2021			013198		1,074.00
8240	KLEAN KARS LLC	E	10/12/2021			013199		447.00

VENDOR SET: 99 City of Pittsburgh, KS

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VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
8246	BETHANY ANN BROOKS	E	10/12/2021			013200		596.00
8291	ELYSE MUSIL	E	10/12/2021			013201		327.50
8337	BLACKSTONE AUDIO, INC.	E	10/12/2021			013202		101.39
8446	ELITE MOBILE POWERWASHING, LLC	E	10/12/2021			013203		7,847.93
0133	JIM RADELL CONSTRUCTION COMPAN	E	10/12/2021			013204		12,545.00
0317	KUNSHEK CHAT & COAL CO, INC.	E	10/12/2021			013205		791.74
0516	AMERICAN CONCRETE CO INC	E	10/12/2021			013206		720.09
4621	JCI INDUSTRIES INC	E	10/12/2021			013207		12,832.00
6846	GREENWAY ELECTRIC, INC.	E	10/12/2021			013208		17,251.31
7028	MATTHEW L. FRYE	E	10/12/2021			013209		400.00
7427	OLSSON INC	E	10/12/2021			013210		2,651.60
8309	MISSISSIPPI LIME COMPANY	E	10/12/2021			013211		6,644.48
8202	PETROLEUM TRADERS CORPORATION	E	10/18/2021			013212		21,801.28
8499	OPTIMUM FORENSIC SOLUTIONS, L	E	10/18/2021			013213		1,300.00
0030	JAY BYERS	E	10/18/2021			013214		26.19
0046	ETTINGERS OFFICE SUPPLY	E	10/18/2021			013215		437.31
0055	JOHN'S SPORT CENTER, INC.	E	10/18/2021			013216		407.97
0068	BROOKS PLUMBING LLC	E	10/18/2021			013217		627.29
0087	FORMS ONE, LLC	E	10/18/2021			013218		1,094.98
0101	BUG-A-WAY INC	E	10/18/2021			013219		160.00
0105	PITTSBURG AUTOMOTIVE	E	10/18/2021			013220		1,266.83
0133	JIM RADELL CONSTRUCTION COMPAN	E	10/18/2021			013221		18,760.00

VENDOR SET: 99 City of Pittsburg, KS

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DATE RANGE:10/06/2021 THRU 10/19/2021

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
0202	CLIFF HIX ENGINEERING INC	E	10/18/2021			013222		318.00
0253	TAMARA N NAGEL	E	10/18/2021			013223		190.90
0294	COPY PRODUCTS, INC.	E	10/18/2021			013224		115.05
0335	CUSTOM AWARDS, LLC	E	10/18/2021			013225		25.00
0455	LARRY BARRETT BODY * FRAME * T	E	10/18/2021			013226		2,551.26
0577	KANSAS GAS SERVICE	E	10/18/2021			013227		490.79
0627	BOETTCHER SUPPLY INC	E	10/18/2021			013228		91.33
0659	PAYNES INC	E	10/18/2021			013229		5,148.20
1199	SCURLOCK INDUSTRIES OF NORTH M	E	10/18/2021			013230		224.00
1238	SEWARD ELECTRIC, INC.	E	10/18/2021			013231		13,103.01
1478	KANSASLAND TIRE #1828	E	10/18/2021			013232		30.00
1619	MIDWEST TAPE, LLC	E	10/18/2021			013233		44.98
1792	B&L WATERWORKS SUPPLY, LLC	E	10/18/2021			013234		6,822.05
2025	SOUTHERN UNIFORM & EQUIPMENT L	E	10/18/2021			013235		396.62
2035	O'BRIEN ROCK CO., INC.	E	10/18/2021			013236		4,460.88
2186	PRODUCERS COOPERATIVE ASSOCIAT	E	10/18/2021			013237		1,689.74
4307	HENRY KRAFT, INC.	E	10/18/2021			013238		185.82
6577	GREENSPRO INC	E	10/18/2021			013239		1,328.00
7038	SIGNET COFFEE ROASTERS	E	10/18/2021			013240		43.75
7100	FIRST UNITED METHODIST CHURCH	E	10/18/2021			013241		2,132.52
7239	JERRY MILLER	E	10/18/2021			013242		1,210.00
7407	LIMELIGHT MARKETING LLC	E	10/18/2021			013243		1,899.00



VENDOR SET: 99 City of Pittsburgh, KS

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DATE RANGE:10/06/2021 THRU 10/19/2021

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
7427	OLSSON INC	E	10/18/2021			013244		8,415.00
7448	CARUS CORPORATION	E	10/18/2021			013245		2,658.48
7629	EARLES ENGINEERING & INSPECTIO	E	10/18/2021			013246		18,810.38
7655	HW ACQUISITIONS, PA	E	10/18/2021			013247		890.50
7839	VISION SERVICE PLAN INSURANCE	E	10/18/2021			013248		1,583.95
7958	DENNIS OIL COMPANY	E	10/18/2021			013249		1,094.03
8046	CONVERGEONE, INC.	E	10/18/2021			013250		299.10
8309	MISSISSIPPI LIME COMPANY	E	10/18/2021			013251		6,787.23
8312	LYLE T. WALTHALL	E	10/18/2021			013252		100.00
8325	FLEET FUELS LLC	E	10/18/2021			013253		44.50
8445	CHARLEY TAYLOR	E	10/18/2021			013254		300.00
8449	ENCORE ENERGY SERVICES, INC.	E	10/18/2021			013255		661.64
8457	PENSKE COMMERCIAL VEHICLES US,	E	10/18/2021			013256		625.49
6154	4 STATE MAINTENANCE SUPPLY INC	R	10/08/2021			189878		66.42
0523	AT&T	R	10/08/2021			189879		9,243.32
8180	LESLEY ALEXANDRA BOCANEGRA	R	10/08/2021			189882		37.50
6545	CENTER POINT INC	R	10/08/2021			189883		240.85
4263	COX COMMUNICATIONS KANSAS LLC	R	10/08/2021			189884		46.18
4263	COX COMMUNICATIONS KANSAS LLC	R	10/08/2021			189885		94.98
4263	COX COMMUNICATIONS KANSAS LLC	R	10/08/2021			189886		79.79
4263	COX COMMUNICATIONS KANSAS LLC	R	10/08/2021			189887		690.05
4263	COX COMMUNICATIONS KANSAS LLC	R	10/08/2021			189888		357.19

VENDOR SET: 99 City of Pittsburg, KS

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DATE RANGE:10/06/2021 THRU 10/19/2021

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
4263	COX COMMUNICATIONS KANSAS LLC	R	10/08/2021			189889		29.38
4263	COX COMMUNICATIONS KANSAS LLC	R	10/08/2021			189890		96.07
7517	CRAW-KAN TELEPHONE COOPERATIVE	R	10/08/2021			189891		1,269.93
0375	WICHITA WATER CONDITIONING	R	10/08/2021			189892		7.50
8370	WEX HEALTH, INC.	R	10/08/2021			189893		298.08
7680	IMA, INC.	R	10/08/2021			189894		9,375.00
0225	KDOR	R	10/08/2021			189895		11,738.77
8431	CHARLES KITCHIN	R	10/08/2021			189896		100.00
7190	LEXISNEXIS RISK DATA MANAGEMEN	R	10/08/2021			189897		381.92
8417	FRED LUNDIEN	R	10/08/2021			189898		75.00
7817	NORTON POWER SYSTEMS INC	R	10/08/2021			189899		6,525.00
1	OGLE, ALLEN	R	10/08/2021			189900		224.00
7480	RODGER PETRAIT	R	10/08/2021			189901		60.00
8375	TRASH HOG LLC	R	10/08/2021			189902		905.00
7469	RADCLIFF AGENCY, LLC	R	10/08/2021			189905		479.00
6377	SOUTHEAST KANSAS RECYCLING CEN	R	10/08/2021			189906		30.00
6377	SOUTHEAST KANSAS RECYCLING CEN	R	10/08/2021			189907		26.00
1	SPAN, MAXINE	R	10/08/2021			189908		45.00
8089	JORAN STOUT-MITCHELL	R	10/08/2021			189909		120.00
6260	TRANE	R	10/08/2021			189910		1,040.89
8430	EQUIPMENTSHARE.COM, INC	R	10/08/2021			189911		561.35
8209	DPC ENTERPRISES LP	R	10/11/2021			189912		1,408.00

VENDOR SET: 99 City of Pittsburg, KS

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DATE RANGE:10/06/2021 THRU 10/19/2021

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
8452	HECKMAN BRUENING AND KING, LLC	R	10/11/2021			189913		3,100.00
1	ANGELS AMONG US	R	10/15/2021			189914		100.00
0004	MATT BACON	R	10/15/2021			189915		562.50
1	BROOKS, CHERYL L	R	10/15/2021			189916		195.65
6545	CENTER POINT INC	R	10/15/2021			189917		49.99
0375	WICHITA WATER CONDITIONING	R	10/15/2021			189918		87.00
1	DEXYP	R	10/15/2021			189919		109.17
8501	EDELMAN-LYON COMPANY	R	10/15/2021			189920		2,830.00
1108	EVERGY KANSAS CENTRAL INC	R	10/15/2021			189921		574.49
1370	KDHE	R	10/15/2021			189922		1,430.00
0226	KDOR LIQUOR TAX	R	10/15/2021			189923		28.03
7945	LUCKY-BUT LAWN CARE, LLC	R	10/15/2021			189924		130.00
8417	FRED LUNDIEN	R	10/15/2021			189925		100.00
1	MCNAY, DAWN	R	10/15/2021			189926		190.90
0117	GATEHOUSE MEDIA KANSAS HOLDING	R	10/15/2021			189927		147.34
7392	ASSURECO RISK MANAGEMENT & REG	R	10/15/2021			189928		350.00
1712	CHUCK MUNSELL	R	10/15/2021			189929		215.21
1991	OFFICE OF STATE FIRE MARSHAL	R	10/15/2021			189930		30.00
7480	RODGER PETRAIT	R	10/15/2021			189931		40.00
0175	REGISTER OF DEEDS	R	10/15/2021			189932		20.00
1	RIVERA, ENRIQUE	R	10/15/2021			189933		1,701.00
8375	TRASH HOG LLC	R	10/15/2021			189934		387.78

VENDOR I.D.	NAME	STATUS	CHECK DATE	INVOICE AMOUNT	DISCOUNT	CHECK NO	CHECK STATUS	CHECK AMOUNT
8201	ROGER CLEVELAND GOLF COMPANY I	R	10/15/2021			189935		230.76
8089	JORAN STOUT-MITCHELL	R	10/15/2021			189936		80.00
6743	TAILWIND CYCLISTS INC	R	10/15/2021			189937		110.00
6260	TRANE	R	10/15/2021			189938		755.00
2276	UNITED PARCEL SERVICE, INC	R	10/15/2021			189939		18.19
8203	VB OPCO LLC	R	10/15/2021			189940		7,906.69
5589	CELLCO PARTNERSHIP	R	10/15/2021			189941		12,171.44
1	VERIZON WIRELESS - VSAT	R	10/15/2021			189945		80.00
1	WISEMAN, ZACHARY JUSTIN	R	10/15/2021			189946		1,000.00
0752	US 69 HIGHWAY ASSOCIATION	R	10/15/2021			189947		60.00

* * T O T A L S * *	NO	INVOICE AMOUNT	DISCOUNTS	CHECK AMOUNT
REGULAR CHECKS:	63	80,443.31	0.00	80,443.31
HAND CHECKS:	0	0.00	0.00	0.00
DRAFTS:	11	161,278.94	0.00	161,278.94
EFT:	112	292,320.01	0.00	292,320.01
NON CHECKS:	0	0.00	0.00	0.00
VOID CHECKS:	0 VOID DEBITS	0.00		
	VOID CREDITS	0.00	0.00	

TOTAL ERRORS: 0

	NO	INVOICE AMOUNT	DISCOUNTS	CHECK AMOUNT
VENDOR SET: 99	186	534,042.26	0.00	534,042.26
BANK: 80144	186	534,042.26	0.00	534,042.26
REPORT TOTALS:	186	534,042.26	0.00	534,042.26

Passed and approved this 26<sup>th</sup> day of October, 2021.

---

Chuck Munsell, Mayor

ATTEST:

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Tammy Nagel, City Clerk



## **Quote For:**

**Pittsburg Police Department  
Attn: Ben Henderson**

**Reference:  
V300x32\_EL5**

## **Quote By:**

**WatchGuard Video  
Kenny James**

**Date: 08-15-21**

**Serving Law Enforcement with the Most Compelling, Quality Video Products**

 <b>MOTOROLA SOLUTIONS</b>		<b>WatchGuard Video</b> <b>415 E. Exchange</b> <b>Allen, TX 75002</b> <b>(P) 800-605-6734    (F) 212-383-9661</b>			
Issued To:	Pittsburg Police Department - Attention: Ben Henderson			Date:	08-15-21
Project Name:	V300x32_EL5			Quote ID:	WKJ-0083-03

Qty	Item #	Description
(32)	BW-V30-10--	<b>V300, WiFi/Bluetooth Wearable Camera, with Magnetic Chest Mount</b> <ul style="list-style-type: none"> <li>V300, WiFi/Bluetooth Wearable Camera</li> <li>Magnetic Chest Mount</li> </ul>
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$28,640.00</b>

Qty	Item #	Description
(4)	BW-ACK-V3-TSC	<b>Pre Configured V300 Transfer Station II with Power Supply and Cables.</b> <ul style="list-style-type: none"> <li>V300 Transfer Station II</li> <li>TS02, D350, 8-Slot Rack Mount Charge/Upload Dock, 10GB</li> <li>includes kit with Power Supply and Cables.</li> </ul>
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$5,380.00</b>

Qty	Item #	Description
(10)	WGP02614	<b>V300, Battery, Removable and Rechargeable, 3.8V, 4180mAh</b>
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$900.00</b>

Qty	Item #	Description
(1)	WGP02400-500	<b>Evidence Library, Web Server Site License Key</b>
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$1,000.00</b>

Qty	Item #	Description
(160)	WGP02400-520	<b>Evidence Library, VISTA/V300 Annual Device License &amp; Support Fee</b>
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$24,000.00</b>

Qty	Item #	Description
(32)	WGW00300-003	<b>Warranty, V300 3 Year, No-Fault</b>
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$14,400.00</b>

Qty	Item #	Description
(32)	WGW00300-004	Warranty, V300, 4th Year, (requires No Fault Warranty)
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$0.00</b>

Qty	Item #	Description
(32)	WGW00300-005	Warranty, V300, 5th Year, (requires No Fault Warranty)
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$7,520.00</b>

Qty	Item #	Description
(50)	WGP02836	V300 CAMERA MOUNT, M330 MOLLE LOOP W/ QUICK RELEASE LEVERS
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$2,250.00</b>

Qty	Item #	Description
(1)	WGW00122-410	Quick Start Software Installation Service; Remote Install, Training, Configuration, Project Management, Consultation
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$1,500.00</b>

Qty	Item #	Description
(1)	FREIGHT	S&H
<b>Subtotal Price</b> (Excluding sales tax)		<b>\$0.00</b>

#### Quote Notes:

1. This Quote is valid for 90 days from the Quote Date. Pricing may change thereafter.
2. Any sales transaction resulting from this Quote is based on and subject to the applicable Motorola's Standard Terms and Conditions, notwithstanding terms and conditions on purchase orders or other Customer ordering documents.
3. Motorola's Standard Terms and Conditions are found at [www.motorolasolutions.com/product-terms](http://www.motorolasolutions.com/product-terms).
4. Payment Terms: Equipment-Net 30 days upon shipment; Installation-Net 30 days upon completion; Services and Subscription Agreements-Net 30 days from receipt of Order.
5. The pricing in this Quote does not include any applicable taxes (e.g. sales/use tax).
6. Quote good for 90 days from issue.

Quoted by: Kenny James - Regional Sales Manager - 800-605-6734 - [kenny.james@motorolasolutions.com](mailto:kenny.james@motorolasolutions.com)

<b>Total Price</b>	<b>\$85,590.00</b> (Excluding sales tax)
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Motorola Solutions, Inc.  
Kenny James  
Date \_\_\_\_\_

**Re:** WKJ-0083-03

**Agency:** Pittsburg Police Department

**Total Cost:** \$85,590.00

**Contract Reference:** V300x32\_EL5

Please be advised that the Pittsburg Police Department will purchase the goods and/or services offered in your Quote WKJ-0083-03. This constitutes a purchase pursuant to the terms of the specified contract below, including any applicable addenda.

Specified Contract: Master Customer Agreement and attached addenda, signed concurrently herewith.

Agency affirms that a purchase order or notice to proceed is not required for contract performance or for subsequent years of service, and acknowledges that pursuant to \_\_\_\_\_, the funds for this purchase has been authorized. Customer agrees to appropriate funding in accordance with the contract.

Invoices shall be according to the milestone schedule included in the quote and services agreement, should reference 'WKJ-0083-03' and be sent to:

Pittsburg Police Department

Attn: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The equipment will be shipped to the customer at the following address, and the ultimate destination where the equipment will be delivered to the customer is:

Pittsburg Police Department

Attn: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sincerely,

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Email: \_\_\_\_\_

## Online Terms Acknowledgement

This Online Terms Acknowledgement (this “**Acknowledgement**”) is entered into between Watchguard, Inc., with offices at 415 E. Exchange Pkwy, Allen, TX 75002 (“**Watchguard**”) and the entity set forth in the signature block below (“**Customer**”). Watchguard and Customer will each be referred to herein as a “**Party**” and collectively as the “**Parties**”.

**1. Online Terms Acknowledgement.** The Parties acknowledge and agree that the terms of the Master Customer Agreement (“**MCA**”) and applicable Addenda available at [www.motorolasolutions.com/product-terms](http://www.motorolasolutions.com/product-terms), including, without limitation, the Mobile Video Addendum, govern each Ordering Document (as defined in the MSA) between the Parties, including all statements of work, schedules, order forms, and other ordering documents, and further agree that the terms of the MCA and Addenda are incorporated therein and form part of the Parties’ Agreement (as defined in the MCA). For purposes herein, the respective rights and obligations assigned to Motorola Solutions, Inc. within the online terms shall apply to Watchguard, and the respective rights and obligations assigned to ‘Customer’ within the online terms shall apply to Customer signing below. By signing the signature block below, Customer certifies that it has read and agrees to the provisions set forth in this Acknowledgement and to the terms of the MCA and Addenda posted at [www.motorolasolutions.com/product-terms](http://www.motorolasolutions.com/product-terms), and the signatory to this Acknowledgement represents and warrants that he or she has the requisite authority to bind Customer to this Acknowledgement, the MCA and the Addenda.

**2. Entire Agreement.** This Acknowledgement supplements the terms of the MCA and applicable Addenda and forms a part of the Parties’ Agreement. This Acknowledgement, the MCA and applicable Addenda available at [www.motorolasolutions.com/product-terms](http://www.motorolasolutions.com/product-terms), and any all Ordering Documents between the Parties constitutes the entire agreement of the Parties regarding the subject matter hereof, and supersedes all previous agreements, proposals, and understandings, whether written or oral, relating to this subject matter.

**3. Disputes; Governing Law.** Sections 12 – Disputes of the MCA is hereby incorporated into this Acknowledgement *mutatis mutandis*.

**4. Execution and Amendments.** This Acknowledgement may be executed in multiple counterparts, and will have the same legal force and effect as if the Parties had executed it as a single document. The Parties may sign in writing or by electronic signature. An electronic signature, facsimile copy, or computer image of a signature, will be treated, and will have the same effect as an original signature, and will have the same effect, as an original signed copy of this document. This Acknowledgement may be amended or modified only by a written instrument signed by authorized representatives of both Parties.

The Parties hereby enter into this Acknowledgement as of the last signature date below.

**Watchguard: Watchguard, Inc.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Email: \_\_\_\_\_

**Customer: Pittsburg Police Department**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Email: \_\_\_\_\_

## Interoffice Memorandum

**TO:** DARON HALL  
City Manager

**FROM:** MATT BACON  
Director of Public Works & Utilities

**DATE:** October 19, 2021

**SUBJECT:** Agenda Item – October 26, 2021  
Waiver of City Bid Policy  
Flygt Pump Install and Modifications  
Wastewater Treatment Plant

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City staff is requesting Governing Body approval to waive the bid policy to allow for repair of final clarifier no.1 at the Wastewater Treatment Plant. The center column on the basin collapsed on itself. In lieu of replacing the column, the City is proposing the installation of a submersible pump to allow for water to be drained from the basin during high flow events. JCI Industries, Inc. specializes in this type of work and has proposed a cost of \$25,435.00, with a 10-12 week estimated delivery. Work will include all labor, flanges, gaskets, hangers and hardware needed to complete the installation.

Would you please place this item on the agenda for the City Commission meeting scheduled for Tuesday, October 26, 2021. Action necessary will be approval or disapproval of staff's request to authorize this work. This work will be paid for utilizing WWTP operating funds.

If you have any questions concerning this matter, please do not hesitate to contact me.

Attachment: JCI Industries, Inc. Proposal



JCI Industries, Inc.  
2301 W. 20th Street  
Joplin, MO 64804  
Tel: 417-623-4544

[www.jciind.com](http://www.jciind.com)

Sunday, October 17, 2021

Pittsburg KS, City Of - Wastewater  
1920 S. Olive St.  
Pittsburg, KS 66762

Phone: 620-230-5590  
Fax: 620-230-5592

**Attention: Christopher Farinacci**

**Subject:** Flygt Pump Install and Modifications

**Quotation #:** 0782424294TW  
Please refer to this number when ordering

Christopher Farinacci:

We are pleased to respond to your request for quotation with the following items. Please reference our quotation number on all related correspondence. If you have any questions or need additional information please give Doug Allen or myself a call.

Best regards,

*Tristan Watson*

Tristan Watson  
Inside Sales  
JCI Industries, Inc.

*Doug Allen*

Doug Allen  
Sales Engineer  
JCI Industries, Inc.  
316-213-2954



JCI Industries, Inc.  
2301 W. 20th Street  
Joplin, MO 64804  
Tel: 417-623-4544  
[www.jciind.com](http://www.jciind.com)

Sunday, October 17, 2021

Quote #: 0782424294TW

Item	Description	Qty	Unit Price
1.00	<b>Installation and Piping of Flygt 3127 Pump Unit</b> Includes: <ul style="list-style-type: none"><li>- Qty. 1 Flygt 3127, 4" submersible pump</li><li>- flexible discharge line from pump to catwalk</li><li>- 4", sch. 80 pvc discharge pipe attached running the length of, and attached to the cat walk.</li><li>- 4" flexible discharge line running from the end of the cat walk that will attach to sch. 80 pvc that will run up and over the wall for discharging into the filter</li><li>- Qty. 1 simplex control panel with minicas.</li><li>- all labor, flanges, gaskets, hangers and hardware needed to complete the installation.</li></ul>	1	\$25,435.00

\*This quote assumes being able to reuse the existing wire and conduit from the MCC to the basin. If it is discovered that this wire is not reusable at time of installation replacement will be bid at that time.

10-12 Weeks Estimated Delivery

Terms & Conditions	
<b>Lead Time</b> 10 Weeks After Receiving Order	<b>Payment Terms</b> Net 30
<b>Shipping Method</b> Best Way	<b>Shipping Terms</b> Prepaid and Added to Invoice
<b>F.O.B.</b> Warehouse	Due to current market conditions, please confirm pricing at point of order.





JCI Industries, Inc.  
2301 W. 20th Street  
Joplin, MO 64804  
Tel: 417-623-4544

[www.jciind.com](http://www.jciind.com)

#### STANDARD TERMS OF SALE

1. Applicable Terms. These terms govern the purchase and sale of the equipment and related services, if any (collectively, "Equipment"), referred to in Seller's purchase order, quotation, proposal, or acknowledgment, as the case may be ("Seller's Documentation"). Whether these terms are included in an offer or an acceptance by Seller, such offer or acceptance is conditioned on Buyer's assent to these terms. Seller rejects all additional or different terms in any of Buyer's forms or documents.
2. Payment. Buyer shall pay Seller the full purchase price as set forth in Seller's Documentation. Unless Seller's Documentation provides otherwise, freight, storage, insurance and all taxes, duties or other governmental charges relating to the Equipment shall be paid by Buyer. If Seller is required to pay any such charges, Buyer shall immediately reimburse Seller. Pricing will be reviewed upon the announcement of any tariffs pertaining to the importation or exportation of key components, or products in their entirety. All payments are due within 30 days after receipt of invoice. Buyer shall be charged the lower of 1 ½% interest per month or the maximum legal rate on all amounts not received by the due date and shall pay all of Seller's reasonable costs (including attorneys' fees) of collecting amounts due but unpaid.
3. Delivery. Delivery of the Equipment shall be in material compliance with the schedule in Seller's Documentation.
4. Ownership of Materials. All devices, designs (including drawings, plans and specifications), estimates, prices, notes, electronic data and other documents or information prepared or disclosed by Seller, and all related intellectual property rights, shall remain Seller's property. Seller grants Buyer a non-exclusive, non-transferable license to use any such material solely for Buyer's use of the Equipment. Buyer shall not disclose any such material to third parties without Seller's prior written consent.
5. Changes. Seller shall not implement any changes in the scope of work described in Seller's Documentation unless Buyer and Seller agree in writing to the details of the change and any resulting price, schedule, or other contractual modifications. This includes any changes necessitated by a change in applicable law occurring after the effective date of any contract including these terms.
6. Warranty. Subject to the following sentence, Seller warrants to Buyer that the Equipment shall materially conform to the description in Seller's Documentation and shall be free from defects in material and workmanship. The foregoing warranty shall not apply to any Equipment that is specified or otherwise demanded by Buyer and is not manufactured or selected by Seller, as to which (i) Seller hereby assigns to Buyer, to the extent assignable, any warranties made to Seller and (ii) Seller shall have no other liability to Buyer under warranty, tort or any other legal theory. If Buyer gives Seller prompt written notice of breach of this warranty within 18 months from delivery or 1 year from acceptance, whichever occurs first (the "Warranty Period"), Seller shall, at its sole option and as Buyer's sole remedy, repair or replace the subject parts or refund the purchase price therefor. If Seller determines that any claimed breach is not, in fact, covered by this warranty, Buyer shall pay Seller its then customary charges for any repair or replacement made by Seller. Seller's warranty is conditioned on Buyer's (a) operating and maintaining the Equipment in accordance with Seller's instructions, (b) not making any unauthorized repairs or alterations, and (c) not being in default of any payment obligation to Seller. Seller's warranty does not cover damage caused by chemical action or abrasive material, misuse, or improper installation (unless installed by Seller). THE WARRANTIES SET FORTH IN THIS SECTION ARE SELLER'S SOLE AND EXCLUSIVE WARRANTIES AND ARE SUBJECT TO SECTION 10 BELOW. SELLER MAKES NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.
7. Indemnity. Seller shall indemnify, defend, and hold Buyer harmless from any claim, cause of action or liability incurred by Buyer as a result of third-party claims for personal injury, death or damage to tangible property, to the extent caused by Seller's negligence. Seller shall have the sole authority to direct the defense of and settle any indemnified claim. Seller's indemnification is conditioned on Buyer (a) promptly, within the Warranty Period, notifying Seller of any claim, and (b) providing reasonable cooperation in the defense of any claim.
8. Force Majeure. Neither Seller nor Buyer shall have any liability for any breach (except for breach of payment obligations) caused by extreme weather or other act of God, strike or other labor shortage or disturbance, fire, accident, war or civil disturbance, delay of carriers, failure of normal sources of supply, act of government or any other cause beyond such party's reasonable control. Seller shall not be responsible for any failure to perform, or delay in performance of, its obligations resulting from the COVID-19 pandemic or any future epidemic, and Buyer shall not be entitled to any damages resulting thereof.
9. Cancellation. If Buyer cancels or suspends its order for any reason other than Seller's breach, Buyer shall promptly pay Seller for work performed prior to cancellation or suspension and any other direct costs incurred by Seller as a result of such cancellation or suspension.
10. LIMITATION OF LIABILITY. NOTWITHSTANDING ANYTHING ELSE TO THE CONTRARY, SELLER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, PUNITIVE OR OTHER INDIRECT DAMAGES, AND SELLER'S TOTAL LIABILITY ARISING AT ANY TIME FROM THE SALE OR USE OF THE EQUIPMENT SHALL NOT EXCEED THE PURCHASE PRICE PAID FOR THE EQUIPMENT. THESE LIMITATIONS APPLY WHETHER THE LIABILITY IS BASED ON CONTRACT, TORT, STRICT LIABILITY OR ANY OTHER THEORY.
11. Miscellaneous. If these terms are issued in connection with a government contract, they shall be deemed to include those federal acquisition regulations that are required by law to be included. These terms, together with any quotation, purchase order or acknowledgement issued or signed by the Seller, comprise the complete and exclusive statement of the agreement between the parties (the "Agreement") and supersede any terms contained in Buyer's documents, unless separately signed by Seller. No part of the Agreement may be changed or cancelled except by a written document signed by Seller and Buyer. No course of dealing or performance, usage of trade or failure to enforce any term shall be used to modify the Agreement. If any of these terms is unenforceable, such term shall be limited only to the extent necessary to make it enforceable, and all other terms shall remain in full force and effect. Buyer may not assign or permit any other transfer of the Agreement without Seller's prior written consent. The Agreement shall be governed by the laws of the State of Delaware without regard to its conflict of laws provisions.
12. Credit Approval. If at any time information available on Purchaser's financial condition or credit history, in JCI's judgment, does not justify the terms of payment specified herein, JCI may require full or partial payment in advance, or an acceptable form of payment guarantee such as a bank letter of credit, or other modifications to terms of payment.
13. Back Charges. JCI shall not be liable for any charges incurred by Purchaser for work, repairs, replacements, or alterations to the Products, without JCI's prior written authorization, and any adverse consequences resulting from such unauthorized work shall be Purchaser's full responsibility.

## Interoffice Memorandum

**TO:** DARON HALL  
City Manager

**FROM:** MATT BACON  
Director of Public Works & Utilities

**DATE:** October 20, 2021

**SUBJECT:** Agenda Item – October 26, 2021  
Water Treatment Plant – Odor Control Study

---

Olsson has recently completed Phase I of the Water Treatment Plant Odor Control Study identifying viable options for the City to consider. Upon execution of the agreement, Olsson along with City staff were to report to the City Commission the initial findings prior to moving forward with Phase II of the study.

Staff would like to present these findings in summarization of the attached memorandum from Olsson. In this regard, would you please place this item on the agenda for the City Commission meeting scheduled for Tuesday, October 26, 2021.

**Action necessary:**

- Approve moving forward with Phase II of the study as defined within the original agreement.  
OR
- Approve utilizing remaining funds previously approved for Phase II and modify for use with a Pilot Study.  
OR
- Discontinue the Odor Control Study thus closing out the project with Olsson.

If you have any questions concerning this matter, please do not hesitate to contact me.

Attachment: Olsson Memorandum dated October 12, 2021

# MEMO

- ☐ Overnight
- ☐ Regular Mail
- ☐ Hand Delivery
- ☒ Other: Electronic

<b>To:</b>	Matt Bacon, City of Pittsburg
<b>From:</b>	Molly Pesce, Olsson Nolan Groff, Olsson
<b>RE:</b>	Pittsburg, KS WTP Odor Control Study - Phase 1
<b>Date:</b>	October 12, 2021
<b>Project #:</b>	A21-01910

On behalf of the City of Pittsburg, KS, Olsson presents the findings of Phase 1 of the Pittsburg, KS Water Treatment Plant Odor Control Study. This memorandum and the attached documents were developed in accordance with our agreement dated January 26, 2021.

This memorandum and the included attachments represent the findings of Phase 1 of the Odor Control Study. In this phase of the study, Olsson considered the feasibility of five odor control alternatives to address odorous hydrogen sulfide emissions from the Water Treatment Plant. Olsson reviewed each potential alternative regarding the following criteria:

- Removal of hydrogen sulfide from the raw water at existing or improved rates
- Reduction of odorous emissions
- Estimated construction cost
- Estimated operations and maintenance cost
- Operation and maintenance difficulty
- Net present value

Hydrogen sulfide (H<sub>2</sub>S) is an odorous compound frequently encountered in well water, such as is treated at the City's Water Treatment Plant. Although H<sub>2</sub>S is not a primary contaminant of concern regulated by the United States Environmental Protection Agency, it is typically removed from drinking water due to its objectionable taste and odor as well as its corrosive nature. Currently, the City uses two aeration towers to remove hydrogen sulfide from raw water. As part of the off-gassing, H<sub>2</sub>S is discharged to the atmosphere without treatment.

Olsson considered two general approaches to mitigate odor emissions at the WTP. First, Olsson reviewed equipment that could effectively remove H<sub>2</sub>S from existing aeration tower off-gas before discharging to the atmosphere. Second, Olsson reviewed different water treatment processes that would remove H<sub>2</sub>S from the raw water without discharging odorous compounds to the atmosphere. No sampling of aeration tower off-gas or raw water was performed as part of this preliminary phase of the study, so Olsson assumed conservative concentrations of H<sub>2</sub>S in the off-gas and raw water to perform an initial screening of alternatives. Sampling and process testing would be necessary to proceed with further design or study of any potential alternative.

Olsson considered three alternatives that would treat air from the existing aeration towers. These included Alternative 1A - Biofilter, Alternative 1B - Biotrickling Filter, and Alternative 1C - Activated Carbon Adsorption. Air from the aeration towers would be forced through new ductwork to the treatment process before discharge to the atmosphere. Each treatment process considered is commonly encountered in



both municipal and industrial applications and has been proven to be effective at the removal of hydrogen sulfide and other odorous compounds from air.

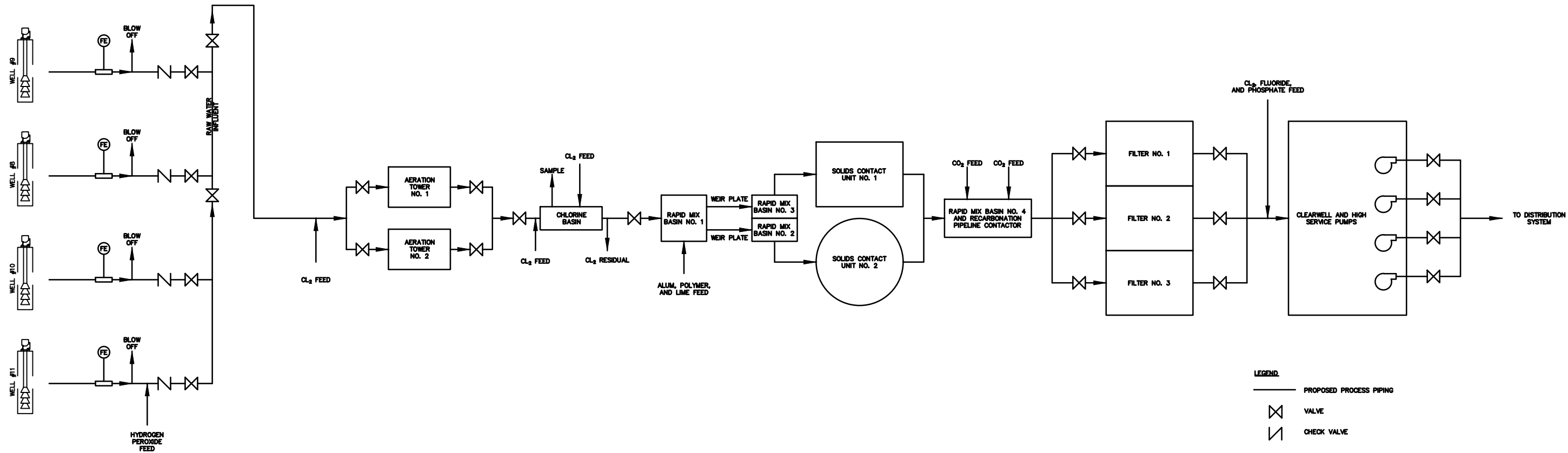
Olsson also considered two alternative water treatment processes, in place of the existing aeration towers, to remove hydrogen sulfide from raw water without discharging odors to the atmosphere. These treatment options included Alternative 2 - Ozone and Alternative 3 - Chemical Feed. Ozone is a powerful oxidizing agent that can be generated on site and is used for reduction of hydrogen sulfide and other contaminants of concern. Olsson also scanned for other chemical options based on the City's raw water quality and determined that hydrogen peroxide was the most feasible chemical option for hydrogen sulfide removal. Both ozone and hydrogen peroxide are used in the municipal industry for oxidization of hydrogen sulfide and can effectively convert hydrogen sulfide to a solid form that can be removed in the existing solids contact units at the WTP.

For reference, Olsson considered the option that the City continue current operation without any improvements. The existing aeration towers are effectively removing H<sub>2</sub>S from the raw water, although maintenance of the towers is labor intensive and difficult. Continuing current operation would not reduce odorous emissions or mitigate maintenance issues. In addition, the existing aeration towers are nearing the end of their useful life and will require replacement.

Attachment A includes a process flow diagram showing the existing WTP processes. The draft technical memorandum in Attachment B includes a detailed discussion of the alternatives considered and the screening analysis Olsson performed. The exhibits in Attachment C show schematics of each potential alternative. Attachment D includes a summary of the results of Olsson's alternative comparison. Attachment E contains detailed breakdowns of Olsson's conceptual cost estimates. Olsson will present final recommendations after further discussion in a revised version of this memo.

## **ATTACHMENT A**

### Existing WTP Process Flow Diagram



PROJECT NO: A21-01910  
DRAWN BY: NMG  
DATE: 10/12/2021

PROCESS FLOW DIAGRAM  
PITTSBURG, KS WATER TREATMENT PLANT

**olsson**

OLSSON - CIVIL ENGINEERING  
MISSOURI CERTIFICATE OF AUTHORITY #  
1301 Burlington Street  
North Kansas City, MO 64116  
TEL 816.361.1177

EXHIBIT

1

## **ATTACHMENT B**

Odor Control Alternative Technical Memorandum Dated  
October 12, 2021

# TECHNICAL MEMO

- ☐ Overnight
- ☐ Regular Mail
- ☐ Hand Delivery
- ☒ Other: Electronic

<b>To:</b>	Matt Bacon, City of Pittsburg
<b>From:</b>	Molly Pesce, Olsson Nolan Groff, Olsson
<b>RE:</b>	Pittsburg, KS WTP Odor Control Study - Phase 1
<b>Date:</b>	October 12, 2021
<b>Project #:</b>	A21-01910

## Introduction

Olsson was tasked with evaluating and presenting odor control strategies associated with release of hydrogen sulfide gas from existing aeration towers at the Pittsburg Water Treatment Plant (WTP). This technical memo describes Olsson's screening analysis for potential odor control approaches at the WTP including descriptions of the alternatives evaluated, assumptions made, cost and non-cost criteria analysis, and recommendations for further implementation.

## Background

The City of Pittsburg, KS (City) currently operates the Pittsburg Water Treatment Plant (WTP) located at 602 S. Free King Highway. The WTP treats groundwater from four wells with aeration, chemical addition, coagulation, settling, disinfection, and filtration prior to distribution. The WTP was last upgraded in 2009 and is rated for a peak daily flow of 4.45 million gallons per day (MGD).

This study focused on odor control associated with the operation of the forced draft, packed aeration towers operated by the City to remove hydrogen sulfide (H<sub>2</sub>S) from the raw water. H<sub>2</sub>S is not a primary contaminant of concern regulated by the United States Environmental Protection Agency, however, H<sub>2</sub>S is typically removed from drinking water due to its objectionable taste and odor as well as its corrosive nature. Currently, the aeration towers are discharged to the atmosphere in air without treatment of the off-gas.

No data was collected throughout this study regarding the current concentrations of H<sub>2</sub>S in the air from the aeration towers. However, the City has received odor complaints from neighboring properties. The City currently mitigates odors by altering operation of the WTP's wells and injecting hydrogen peroxide into raw water from Well 11 only. When possible, the City operates the WTP with raw water from Well 11 to oxidize H<sub>2</sub>S in the raw water through the influent piping and prevent significant discharge of H<sub>2</sub>S from the aeration towers. When water demands exceed the capacity of Well 11, the City operates additional wells during the evening to mitigate odor complaints. The City intended these operational procedures to be temporary and plans to implement a long-term solution to the odors at the WTP.

# Alternatives

Olsson considered odor control alternatives including treatment of discharge air from the existing aeration towers as well as alternative processes in place of the aeration towers to treat the H<sub>2</sub>S in the raw water and eliminate the need for aeration.

## Odor Control Alternatives

Olsson considered treatment of the discharge air from the existing aeration towers to mitigate the H<sub>2</sub>S concentrations in the air leaving the WTP. The City is satisfied with the ability of the existing aeration towers to remove H<sub>2</sub>S from treated water, so no water treatment process change was considered necessary for an odor control alternative. The odor control alternatives considered would not require approval from the Kansas Department of Health and Environment (KDHE) because the processes discussed do not affect treatment of the drinking water.

### Design Criteria

Each odor control alternative considered could be installed on a new concrete pad north of the existing aeration towers. Ductwork would be installed to connect the existing aeration tower discharge to the potential odor control equipment. Air would be discharged to the atmosphere following treatment by each potential technology. No data was available regarding the existing H<sub>2</sub>S concentrations in the aeration tower discharge air, so Olsson conservatively assumed an H<sub>2</sub>S concentration based on past experience with similar projects. Olsson assumed the design criteria presented in Table 1 below for the preliminary screening of each odor control alternative.

**Table 1. Odor Control alternative Design Criteria.**

Parameter	Value	Unit <sup>1</sup>
Air Flow Rate	40,000	CFM
Average Gaseous H <sub>2</sub> S Concentration	7	ppm
Peak Gaseous H <sub>2</sub> S Concentration	100	ppm
Average/Peak Gaseous H <sub>2</sub> S Concentration (Biotrickling Filter Only) <sup>2</sup>	15	ppm

<sup>1</sup> The following unit abbreviations were used:

CFM = cubic feet per minute

ppm = parts per million (volume)

<sup>2</sup> Due to the limited ability of biotrickling filters to treat a wide range of H<sub>2</sub>S concentrations, Olsson assumed different average and peak H<sub>2</sub>S concentrations for initial review. Additional data would be required to determine whether a biotrickling filter would be feasible for the H<sub>2</sub>S concentrations experienced at the WTP.

### Alternative 1A - Biofilter

Biofilter systems may use different media types, but the two main media types are either organic media such as a bark mulch base or long-life engineered media.

Organic biofilters typically employ such materials as yard compost, wood chips, and bark. Caution is urged when selecting compost materials because immature or unstable material can produce foul odor as it is metabolized. Generally, if organic media biofilters are used, then the industry trend is towards coarse wood chip or bark media systems. Bark mulch style biofilters can be effective at treating offensive odors but tend to have a residual low-level earthy smell related to the organic materials.

A key drawback to these organic materials compared to an engineered media is that they decay and compact over time, and the higher the odor loading rate, the greater the rate of decay and compaction. Organic media systems also require longer contact times (60 seconds) and the media cannot be stacked as deeply (4 feet +/-) due to pressure loss issues and potential for media compaction. The result is that organic material systems require larger footprints, and the media must be periodically replaced (typically every 2 to 3 years).

Several vendors are now providing long-life engineered media systems. A key benefit to these systems is that the materials resist decay and compaction, resulting in a much longer media life. Some vendors will offer a 10- to 20-year media warranty. The engineered media systems also do not require as much contact time. Because the media can be stacked deeper (6 to 8 feet) and the contact times are shorter (40 to 45 seconds), this type of system has the smallest footprint requirement compared to other biofilter types. Engineered media also does not tend to have a musty woody residual odor as is often the case with bark/mulch style systems. Advantages and disadvantages of the two media alternatives are summarized below in Table 2.

**Table 2. Advantages and Disadvantages of Organic versus Engineer Biofilter Media.**

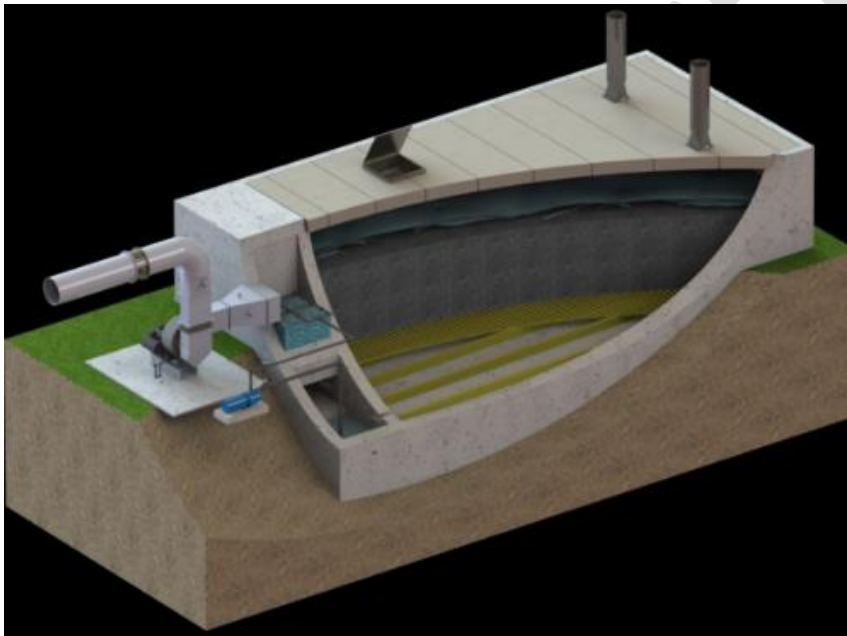
Media	Advantages	Disadvantages
Organic Media	<ul style="list-style-type: none"> <li>- Lower initial capital cost.</li> </ul>	<ul style="list-style-type: none"> <li>- Larger footprint due to longer contact times and lower acceptable media depth.</li> <li>- Potential compaction and degradation over time.</li> <li>- Media may require reworking or “fluffing” occasionally to minimize degradation, compaction, and surface crusting.</li> <li>- Life span of 2 to 3 years, depending on composition and care.</li> <li>- Moisture control is more critical to prevent cracking, shrinking, and swelling problems.</li> <li>- Higher weed potential as compared to engineered media.</li> <li>- Tendency for residual earthy-musty odors.</li> <li>- May be hydrophobic if dried (difficult to rehydrate).</li> </ul>
Engineered Media	<ul style="list-style-type: none"> <li>- Smaller footprint due to shorter contact times and higher acceptable media depth.</li> <li>- Warranted life spans of 10 to 20 years</li> <li>- Large pH buffering capacity to counteract acid formation from biological oxidation of H<sub>2</sub>S.</li> <li>- Lower weed potential as compared to organic media.</li> <li>- Relatively stable head loss over time.</li> <li>- Moisture control not as critical as for organic media.</li> <li>- Easy to re-hydrate.</li> <li>- Not prone to shrinking and swelling problems.</li> <li>- Minimal compaction and degradation over time.</li> </ul>	<ul style="list-style-type: none"> <li>- Greater initial capital cost.</li> </ul>

Based on the considerations outlined above, the long-life engineered media biofilter approach is recommended for consideration compared to bark-style organic media systems because of the reduced footprint as well as the long-term reliability of the manufactured media. The engineered media biofilter

also has reduced annual costs due to less maintenance, long lasting media, and typically a lower power consumption fan (due to less pressure loss through the engineered media versus organic media). Long-life engineered media systems were assumed for the evaluation in this section.

Biofilter systems are not mechanically challenging and are low maintenance. These systems can remove 99 percent of  $H_2S$  and reducing overall odors by a minimum of 90 percent, as defined by odor-panel analysis under ASTM 679-04. Biological systems require a constant odor source, so do not work well for intermittent odor sources where the system may be turned off and on, as necessary.

The biofilter systems may be constructed on-site with concrete vessels or enclosed fiberglass reinforced plastic (FRP) or stainless steel biofilter systems. The enclosed biofilters are completely self-contained units usually located above grade but are typically more costly than the on-site constructed concrete vessel. Figure 1 shows a cutaway schematic of a biofilter system using a concrete vessel installed on-site.



**Figure 1. Example of an Engineered Media Biofilter.**

For the Pittsburgh WTP, a biofilter system with engineered media would have an approximate pad footprint of 50 feet by 80 feet and would be about 14 feet tall.

### ***Alternative 1B - Biotrickling Filter***

A biotrickling filter is a biological system like the biofilter but the vessel appears externally similar to a packed tower chemical scrubber. However, unlike chemical scrubbers, no chemical addition is required. Systems are typically pre-engineered, vendor supplied FRP vessel systems. The vessel has internal media that is completely inert (i.e., plastic foam or ceramic media), on which microorganisms grow. The inert media can receive either an intermittent or a constant recycled water spray for humidification of the media depending on the vendor. This spray is also the source of trace nutrients for the biological system, as compared to biofilters where the nutrients (such as trace organics, nitrogen, phosphorous, and potassium) are in the media itself. For the biotrickling filter systems with constant recycle, the make-up water rate in the sump is sometimes used to control the resulting pH of the biological system and thereby



selectively targets different types of microorganisms that in turn consume different types of odor-causing compounds.

Potential advantages of biotrickling filters over biofilters are the lower detention times required (10 to 20 seconds compared to 40 to 60 seconds for biofilters), which results in a smaller footprint compared to biofilters (although biotrickling filters are usually taller).

Biotrickling filters also have long inert media life, but normally require the use of a nutrient feed system for the spray water if the sump make-up water does not contain enough of the required nutrients.

Biotrickling filters work very well for  $H_2S$  (99 percent removal); however, they usually cannot achieve odor reductions of more than 60 percent by themselves for other organic based odor compounds and sometimes need to be followed by a second treatment for polishing such as carbon adsorption depending on the ultimate odor reduction goals. Biological systems, like the biotrickling filter, require a constant odor source, so do not work well for intermittent odor sources where the system may be turned off and on, as necessary. Figure 2 shows a picture of a biotrickling filter.



**Figure 2. Example of a Biotrickling filter.**

For the Pittsburg WTP, a biotrickling filter system would require two 13-foot diameter by 32-foot tall biotrickling filter vessels. The approximate pad footprint would be 36 feet by 24 feet to accommodate the necessary blowers and nutrient systems. Depending upon the odor compounds present and the variability of odor compound concentrations, additional polishing of off-gas from the biotrickling filter may be necessary. Further polishing would be performed by a carbon adsorption system.

### **Alternative 1C - Carbon Adsorption System**

Carbon adsorption systems use activated carbon to remove odor-causing compounds, which are physically adsorbed to the carbon media from the air stream. Carbon systems have specific adsorption capacities depending on the carbon selected and once that capacity is reached the media needs to be exchanged or regenerated (thermally or with water depending on the carbon type). Regeneration is typically complex and not recommended.

Carbon systems have many advantages including, for example, the variety of odor compounds that can be removed, the good response to variable loadings, and the ease of operation. Some drawbacks of these types of systems are high horsepower exhaust fans to handle the high head losses through the carbon bed and potentially frequent media replacement. The media replacement is very dependent on the load to the system and the capacity of different media. Based on the odor characteristics assumed for this evaluation, the carbon media could require replacement approximately every 3 to 5 years depending upon the media. Figure 3 shows an example of a carbon vessel.



**Figure 3. Example of a Carbon Vessel.**

For the Pittsburg WTP, a carbon system would require two 12-foot diameter by 20.5-foot tall carbon vessels. The approximate pad footprint would be 36 feet by 24 feet to accommodate the necessary blowers and controls.

### **Aeration Tower Replacement**

The existing aeration towers at the WTP are exhibiting signs of deterioration and will need to be replaced at some point during the life of any potential odor control alternative. Additionally, the existing aeration towers require frequent maintenance due to the buildup of solids in the packing material, a common operational challenge with this technology. The City currently cleans the towers with an acid wash cycle at least every 6 months or when pressure drop across the towers exceeds the recommended operating

parameters. However, the City still experiences solid buildup and must clean the towers manually approximately once a year. Manual cleaning of the towers is time and labor intensive. In addition, cleaning requires manned entry of a confined space and presents a potential safety hazard. For the purposes of this analysis, Olsson has assumed that the aeration towers would require replacement in 5 years unless an alternative process is installed. Olsson has also included considered the operation and maintenance costs as well as maintenance difficulty of the existing aeration towers in analyzing all odor control alternatives.

## Ozone Alternative

Olsson considered the use of ozone as a potential alternative that would remove H<sub>2</sub>S from the raw water without requiring discharge of any air containing H<sub>2</sub>S that could cause odor issues. Ozone is a powerful oxidant that would convert H<sub>2</sub>S in the raw water into solid elemental sulfur to be removed in the City's existing solids contact basins. Typical ozone systems generate ozone on-site from liquid oxygen and inject the ozone into the raw water.

### Design Criteria

An ozone system would require pilot plant testing approved by KDHE prior to installation. This screening analysis is limited to a preliminary review, so further benchtop and pilot plant testing would be necessary prior to beginning design of any potential ozone system. Olsson conservatively assumed an ozone dose based on past experience with similar projects. The design parameters assumed by Olsson are presented in Table 3 below.

**Table 3. Ozone Design Criteria.**

Parameter	Value	Unit <sup>1</sup>
Water Flow Rate	4.45	MGD
Ozone Concentration	10	wt %
Ozone Feed Rate	150	ppd
Contact Retention Time	10	min

<sup>1</sup> The following unit abbreviations were used:

MGD = million gallons per day

wt % = weight percent

ppd = pounds per day

min = minutes

### System Description

An ozone system would consist of five major components to generate ozone, inject the ozone into the raw water, and destroy any residual ozone present in the air before discharge. An on-site liquid oxygen system would be required that would include a storage tank for liquid oxygen, vaporizers, a pressure regulating manifold assembly, and a filter manifold assembly. The gaseous oxygen stream from the liquid oxygen system would be combined with a nitrogen boost system that forces dried, filtered air into the combined gas stream. The gaseous oxygen stream would be fed to on-site ozone generators that use a corona arc discharge to convert approximately 10 percent (by weight) of the oxygen into ozone. A cooling water system would be necessary to cool the ozone generators. The ozone gas would then be combined with a sidestream flow of raw water that would be injected into the primary raw water flow and mixed using a static mixer. After the sidestream injection, a contactor would be necessary to achieve the necessary reaction time. Water from the contactor would then be connected to the City's existing

treatment processes. The contactor would be sealed to prevent discharge of any ozone from the unit and the gas from the contactor would be fed to an ozone destruct unit before venting to atmosphere.

Due to the strong oxidizing nature of ozone, it presents health risks to City personnel. Monitoring would be necessary to ensure that employees are not exposed to ozone above the OSHA regulated permissible exposure limits (PEL). All air that could be exposed to ozone gas would be required to flow through the ozone destruct unit to ensure that no ozone is discharged to the atmosphere.



**Figure 4. Example of an ozone system (only ozone generators shown).**

The ozone system itself would be housed in a new 1,600 square foot building with a separate contactor. New power provisions would be necessary to the building as well as electrical equipment inside the building. Control mechanisms would be necessary, and SCADA devices would be integrated into the existing WTP SCADA system.

## Chemical Feed Alternative

In addition to ozone, Olsson considered the use of other potential chemical oxidants to effectively remove  $H_2S$  from the City's raw water. Typical chemicals used in this application include oxygen, chlorine, sodium or potassium permanganate, and hydrogen peroxide. Compared to other typical chemicals, Olsson considered hydrogen peroxide the most viable due to its rapid reaction rate, high reactivity, and lack of undesirable reaction byproducts. The City currently employs oxygen, chlorine, and intermittent hydrogen peroxide to oxidize  $H_2S$ ; however, the City's current hydrogen peroxide feed system was not intended to



fully oxidize the H<sub>2</sub>S as required to eliminate the existing aeration towers. For this analysis, Olsson reviewed a potential hydrogen peroxide feed system that would eliminate the need for aeration.

### Design Criteria

A hydrogen peroxide feed system would require pilot plant testing approved by KDHE prior to installation. This screening analysis is limited to a preliminary review, so further benchtop and pilot plant testing would be necessary prior to beginning design of any potential hydrogen peroxide feed system. Olsson conservatively assumed a hydrogen peroxide dose based on past experience with similar projects. The design parameters assumed by Olsson are presented in Table 4 below.

**Table 4. Hydrogen Peroxide Design Criteria.**

Parameter	Value	Unit <sup>1</sup>
Water Flow Rate	4.45	MGD
Raw Water H <sub>2</sub> S Concentration	2.5	mg/L
Desired Hydrogen Peroxide Concentration	15	mg/L
Desired Contact Time	15	min

<sup>1</sup> The following unit abbreviations were used:

MGD = million gallons per day

mg/L = milligrams per liter

min = minutes

### System Description

A hydrogen peroxide feed system would consist generally of storage and pumping equipment inside a dedicated building, provisions for injection and mixing in the raw water, and a contact basin to allow sufficient reaction time. Hydrogen peroxide solution would be received onsite at a tankard loading area with provisions for secondary chemical spill containment. The hydrogen peroxide solution would be stored in bulk tanks each capable of holding 30 days' worth of peroxide at average flow rates. Olsson estimates that 3,000 gallon bulk storage tanks would be necessary, assuming that 50 weight percent hydrogen peroxide solution is used. Prior to injection, hydrogen peroxide would be pumped from the bulk storage tanks to a day tank capable of storing one day's worth of peroxide at peak flow rates. Olsson estimates that a 115 gallon day tank would be necessary. Two metering pumps, one duty and one stand-by, would pump hydrogen peroxide solution from the day tank into an injector in the plant raw water pipe.

Downstream of the injection point, raw water would be mixed and discharge into parallel contact basins. Olsson estimates that the contact basins would be at least 47,000 gallons to provide a retention time of 15 minutes at the peak raw water flow rate.

Hydrogen peroxide is a strong oxidizing agent and requires additional safety precautions to prevent harm to City personnel and the environment. Due to its strong oxidizing nature, hydrogen peroxide could not be allowed to come into contact with highly reactive oxidizable materials except as intended by design. A safety shower would be necessary should hydrogen peroxide solution contact the skin or eyes of any personnel. Secondary chemical spill containment would be required around all storage tanks, pumping equipment, and unloading facilities to prevent discharge of bulk solution to the environment. Storage of hydrogen peroxide at concentrations greater than 34 weight percent may require Top Screen reporting to the US Department of Homeland Security.

The bulk storage tanks, day tanks, and metering pumps would be installed in a new 750 square foot building. New electrical equipment would be installed in a separate area of the chemical feed building.

Control mechanisms would be necessary, and SCADA devices would be integrated into the existing WTP SCADA system.

# Screening

Following preliminary analysis of the feasibility of each reviewed alternative, Olsson screened potential alternatives based on cost and operational criteria. Olsson's preliminary monetary analysis considered project capital costs, operation and maintenance expenses, and the 20 year net present value for each potential alternative. Preliminary capital and operations and maintenance cost estimates were produced based on Olsson's past experience with similar projects and include a 30 percent contingency. Cost estimates will vary with further design. Olsson's preliminary cost estimates are presented in Table 5 below.

**Table 5. Alternative Cost Criteria Screening.**

Alternative	Estimated Project Cost	Estimated O&M Cost	Estimated Net Present Value
1A - Biofilter	\$ 3,158,000	\$ 173,000	\$ 7,058,000
1B - Biotrickling Filter	\$ 2,060,100	\$ 164,000	\$ 5,826,000
1C - Activated Carbon Adsorption	\$ 2,568,000	\$ 289,000	\$ 8,194,000
2 - Ozone	\$ 5,733,000	\$ 177,000	\$ 8,366,000
3 - Chemical Feed	\$ 2,431,500	\$ 250,000	\$ 6,151,000
4 - Continue Current Operation <sup>1</sup>	\$ -	\$ 57,000	\$ 2,174,000

<sup>1</sup> Continuing current operation would not require an initial capital investment. However, Olsson has assumed that the existing aeration towers will need replacement after five years and included that project cost in the estimated net present value.

Olsson has included the cost of replacing the aeration towers in the estimated net present value, assuming that the towers would be replaced after five years of operation.

Olsson's analysis of non-monetary factors primarily considered both the ability of each alternative to effectively eliminate the odor source and the difficulty of operation and maintenance for each alternative. Table 6 below includes a list of the non-cost criteria associated with each alternative.

**Table 6. Alternative Non-Cost Criteria Screening.**

Alternative	Advantages	Disadvantages
1A - Biofilter	<ul style="list-style-type: none"> <li>- Low Maintenance</li> <li>- Accommodates Fluctuating Odor Concentrations better than Biotrickling Filters</li> <li>- High H<sub>2</sub>S and Overall Odor removal</li> </ul>	<ul style="list-style-type: none"> <li>- Operates Poorly with Intermittent Odor Sources</li> <li>- Large Footprint</li> <li>- Requires Continued Operation of Aeration Towers</li> </ul>
1B - Biotrickling Filter	<ul style="list-style-type: none"> <li>- Low Maintenance</li> <li>- Small Footprint</li> <li>- High H<sub>2</sub>S Removal</li> </ul>	<ul style="list-style-type: none"> <li>- Limited Reduction of Organic-Based Odor Compounds</li> <li>- Operates Poorly with Fluctuating Odor Concentrations or Intermittent Odor Sources</li> <li>- Requires Continued Operation of Aeration Towers</li> </ul>
1C - Activated Carbon Adsorption	<ul style="list-style-type: none"> <li>- Small Footprint</li> <li>- High H<sub>2</sub>S and Overall Odor Removal</li> </ul>	<ul style="list-style-type: none"> <li>- Limited Reduction of Organic-Based Odor Compounds</li> </ul>

Alternative	Advantages	Disadvantages
	<ul style="list-style-type: none"> <li>- Accommodates Fluctuating Odor Concentrations and Intermittent Odor Sources</li> </ul>	<ul style="list-style-type: none"> <li>- Requires Periodic Carbon Changeout</li> <li>- Requires Continued Operation of Aeration Towers</li> </ul>
2 - Ozone	<ul style="list-style-type: none"> <li>- Eliminates Odor Source</li> <li>- Reduction in Chlorine Feed</li> <li>- Potential Reduction in THMs and HAA5s</li> <li>- Improved Treatability</li> </ul>	<ul style="list-style-type: none"> <li>- Requires Pilot Plant Testing</li> <li>- Complex Operation</li> <li>- Building Required</li> <li>- Requires Deliveries of Oxygen</li> <li>- Additional Safety Precautions</li> </ul>
3 - Chemical Feed	<ul style="list-style-type: none"> <li>- Eliminates Odor Source</li> <li>- Eliminates Aeration Towers</li> </ul>	<ul style="list-style-type: none"> <li>- Requires Pilot Plant Testing</li> <li>- Complex Operation</li> <li>- Building, Mixer, and Contact Basin Required</li> <li>- Required Deliveries of Chemical</li> <li>- Additional Safety Precautions</li> </ul>
4 - Continue Current Operation	<ul style="list-style-type: none"> <li>- Effective Removal of H<sub>2</sub>S from Water</li> <li>- No Additional Maintenance Items</li> </ul>	<ul style="list-style-type: none"> <li>- Does not Address Odor Issues</li> <li>- Requires Continued Operation of Aeration Towers</li> </ul>

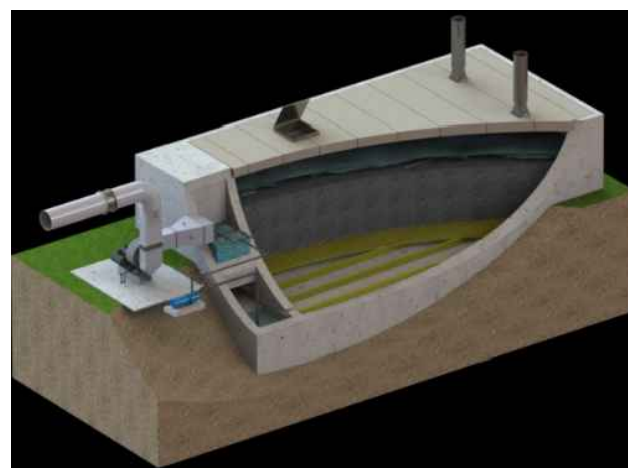
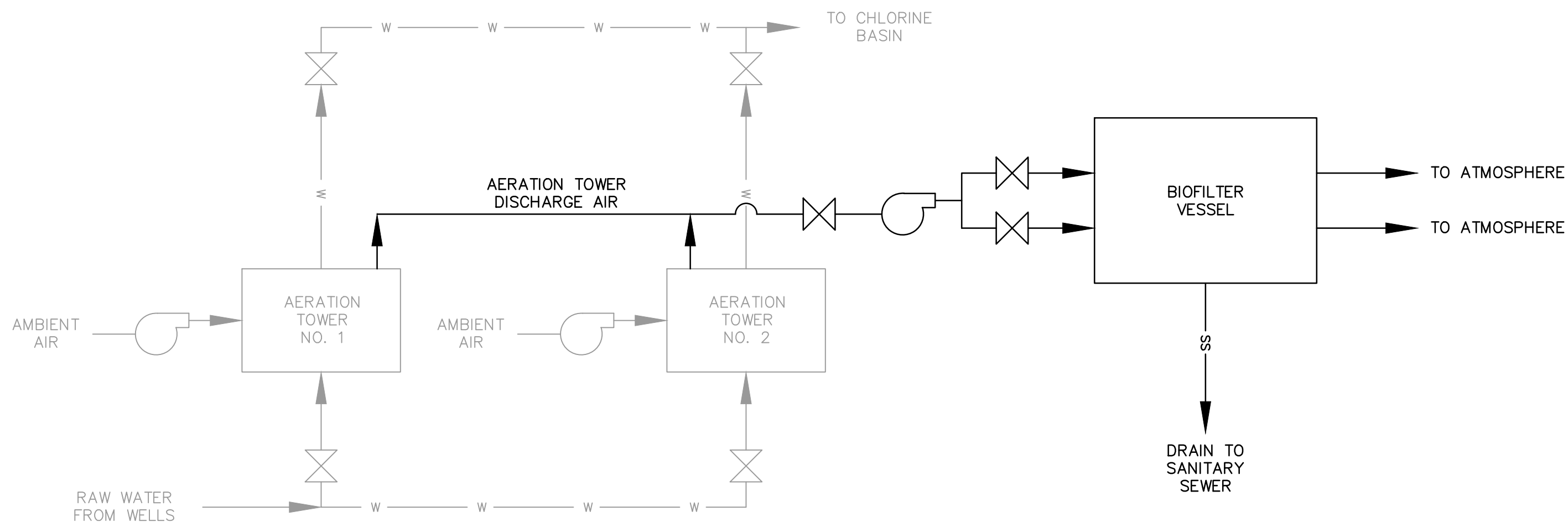
## Recommendations

[To be included after further discussion]

## **ATTACHMENT C**





### Odor Control Alternative Exhibits









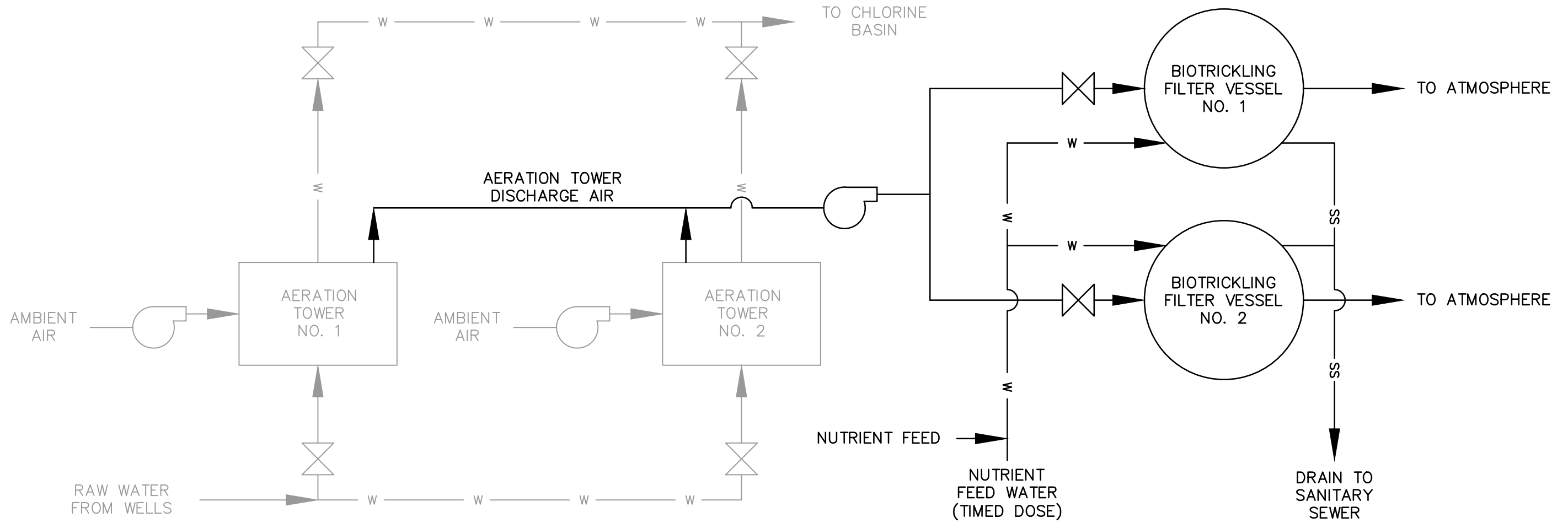
EXAMPLE BIOFILTER (SHOWN FOR REFERENCE)

## LEGEND

 PROPOSED AIR PIPING  
 EXISTING AIR PIPING  
 EXISTING WATER PIPING  
 PROPOSED DRAIN PIPING

	PROPOSED VALVE
	EXISTING VALVE
	PROPOSED BLOWER
	EXISTING BLOWER

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DATE: Oct 04, 2021 2:29pm XREFS:



EXAMPLE BIOTRICKLING FILTER  
(SHOWN FOR REFERENCE)

### LEGEND

- PROPOSED AIR PIPING
- EXISTING AIR PIPING
- PROPOSED WATER PIPING
- EXISTING WATER PIPING
- PROPOSED DRAIN PIPING

- PROPOSED VALVE
- EXISTING VALVE
- PROPOSED BLOWER
- EXISTING BLOWER

PROJECT NO: A21-01910  
DRAWN BY: NMG  
DATE: 10/04/2021

## ALTERNATIVE 1B: BIOTRICKLING FILTER

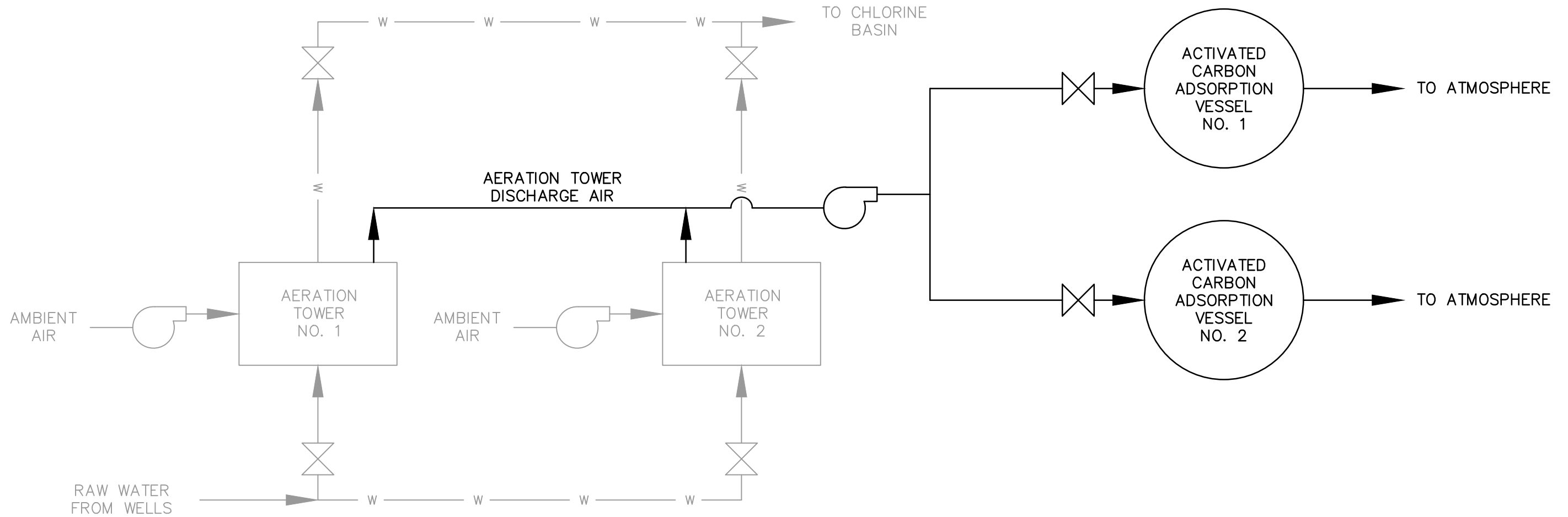
**olsson**

OLSSON - CIVIL ENGINEERING  
MISSOURI CERTIFICATE OF AUTHORITY # 001592  
1301 Burlington Street  
North Kansas City, MO 64116  
TEL 816.361.1177

EXHIBIT

1B

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EXAMPLE ACTIVATED CARBON ADSORPTION VESSEL  
(SHOWN FOR REFERENCE)

#### LEGEND

- PROPOSED AIR PIPING
- - - EXISTING AIR PIPING
- W - EXISTING WATER PIPING
- ⋈ PROPOSED VALVE

- ⋈ EXISTING VALVE
- ☞ PROPOSED BLOWER
- ☞ EXISTING BLOWER

OLSSON - CIVIL ENGINEERING  
MISSOURI CERTIFICATE OF AUTHORITY # 001592

PROJECT NO: A21-01910  
DRAWN BY: NMG  
DATE: 10/04/2021

### ALTERNATIVE 1C: ACTIVATED CARBON ADSORPTION

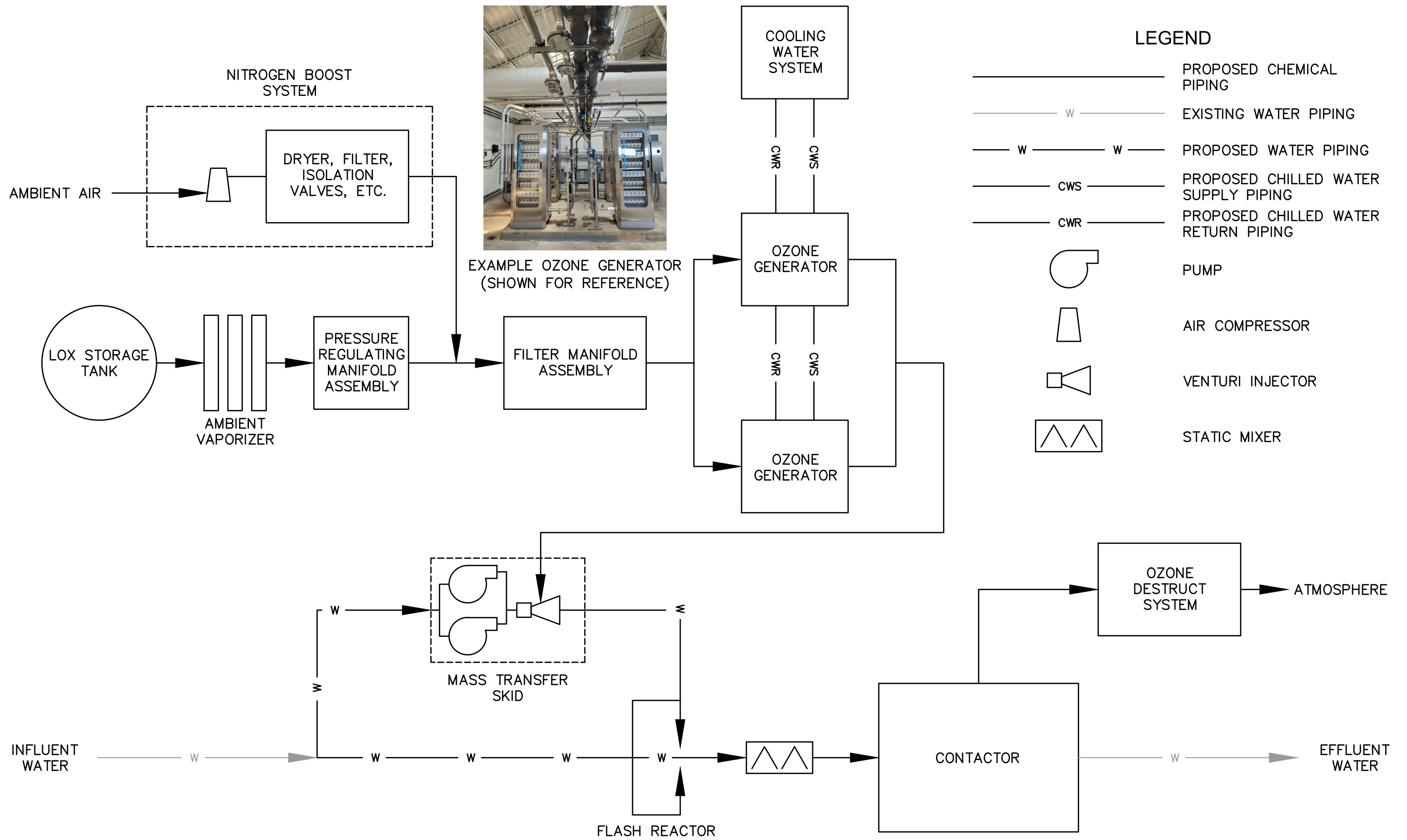
**olsson**

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EXHIBIT

1C

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PROJECT NO:	A21-01910
DRAWN BY:	NMG
DATE:	10/12/2021

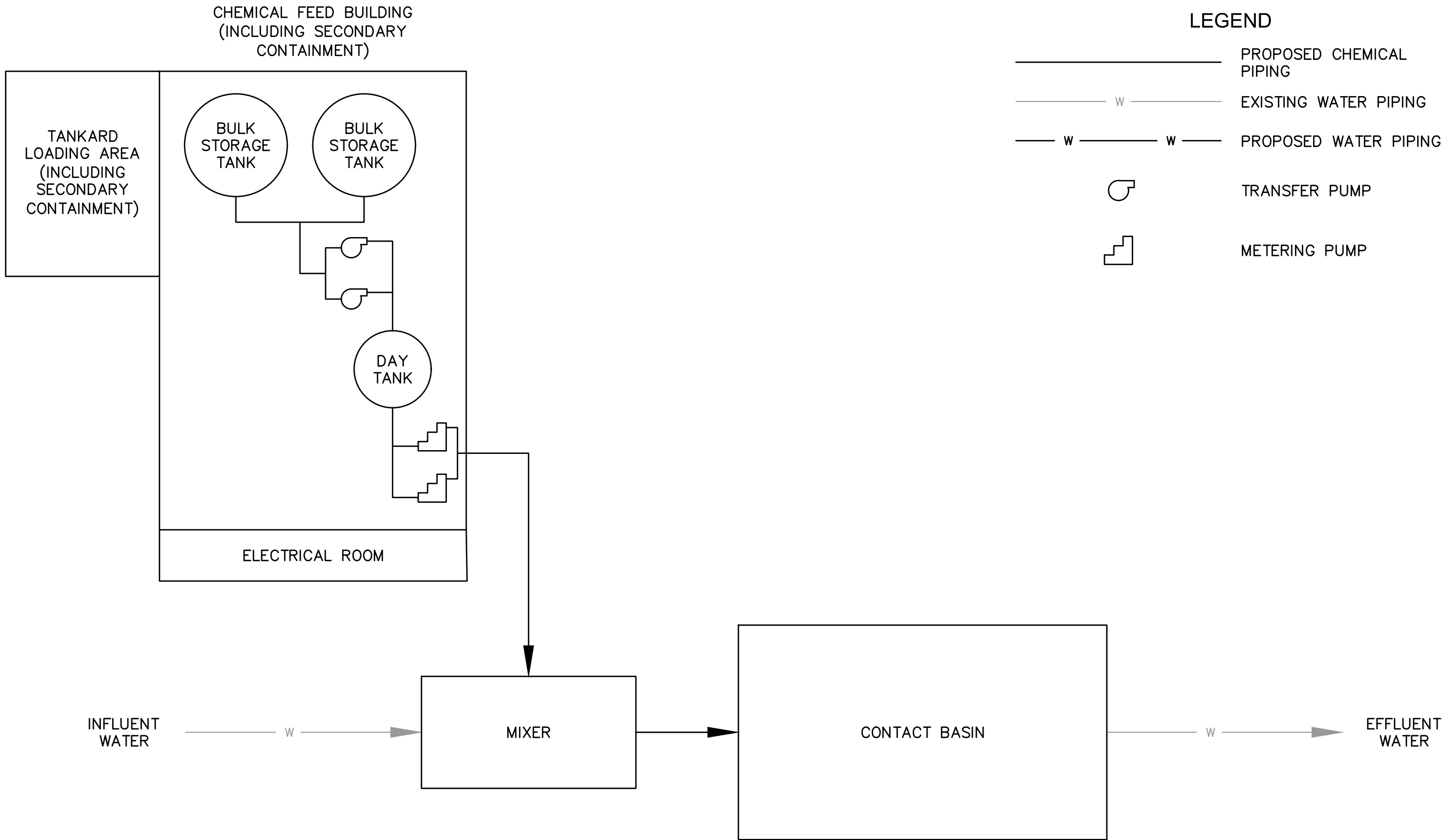
ALTERNATIVE 2: OZONE SYSTEM  
OZONE SYSTEM PROCESS FLOW DIAGRAM

**olsson**

OLSSON - CIVIL ENGINEERING  
MISSOURI CERTIFICATE OF AUTHORITY #  
1301 Burlington Street  
North Kansas City, MO 64116  
TEL 816.361.1177

EXHIBIT
2

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PROJECT NO:	A21-01910
DRAWN BY:	NMG
DATE:	10/12/2021

ALTERNATIVE 3: CHEMICAL FEED SYSTEM  
PROCESS FLOW DIAGRAM

**olsson**

OLSSON - CIVIL ENGINEERING  
MISSOURI CERTIFICATE OF AUTHORITY #  
1301 Burlington Street  
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EXHIBIT

3

## **ATTACHMENT D**

### Odor Control Alternative Comparison Table

**Process Alternatives Comparison**  
**Olsson Project No. A21-01910**  
**October 2021**

ALTERNATIVE	ADVANTAGES	DISADVANTAGES	PROJECT COST	O&M COST	NET PRESENT VALUE <sup>4</sup>	FINAL SCORE
1A - Biofilter <sup>1</sup>	<ul style="list-style-type: none"> <li>- Low Maintenance</li> <li>- Accommodates Fluctuating Odor Concentrations better than Biotrickling Filters</li> <li>- High H<sub>2</sub>S and Overall Odor Removal</li> </ul>	<ul style="list-style-type: none"> <li>- Operate Poorly with Intermittent Odor Sources</li> <li>- Large Footprint (70 ft by 90 ft)</li> <li>- Requires Continued Operation of Aeration Towers</li> </ul>	\$ 3,158,000	\$ 173,000	\$ 7,058,000	
1B - Biotrickling Filter <sup>1</sup>	<ul style="list-style-type: none"> <li>- Low Maintenance</li> <li>- Small Footprint (40 ft by 40 ft)</li> <li>- High H<sub>2</sub>S Removal</li> <li>- Lowest Cost Odor Control Alternative</li> </ul>	<ul style="list-style-type: none"> <li>- Limited Reduction of Organic-Based Odor Compounds</li> <li>- Operate Poorly with Fluctuating Odor Concentrations or Intermittent Odor Sources</li> <li>- Requires Continued Operation of Aeration Towers</li> </ul>	\$ 2,060,100	\$ 164,000	\$ 5,826,000	
1C - Activated Carbon Adsorption <sup>1</sup>	<ul style="list-style-type: none"> <li>- Small Footprint (40 ft by 40 ft)</li> <li>- High H<sub>2</sub>S and Overall Odor Removal</li> <li>- Accommodates Fluctuating Odor Concentrations and Intermittent Odor Sources</li> </ul>	<ul style="list-style-type: none"> <li>- High Power Usage due to Blower Size</li> <li>- Ongoing Expense for Activated Carbon Changeout</li> <li>- Requires Continued Operation of Aeration Towers</li> </ul>	\$ 2,568,000	\$ 289,000	\$ 8,194,000	
2 - Ozone <sup>2</sup>	<ul style="list-style-type: none"> <li>- Eliminates Odor Source</li> <li>- Reduction in Chlorine Feed</li> <li>- Potential Reduction in THMs and HAA5s</li> <li>- Improved Treatability</li> </ul>	<ul style="list-style-type: none"> <li>- Highest Cost Alternative</li> <li>- Requires Pilot Plant Testing</li> <li>- Complex Operation</li> <li>- Building Required</li> <li>- Ongoing Expense for Oxygen and Energy</li> <li>- Additional Safety Precautions</li> </ul>	\$ 5,733,000	\$ 177,000	\$ 8,366,000	
3 - Chemical Feed <sup>3</sup>	<ul style="list-style-type: none"> <li>- Eliminates Odor Source</li> <li>- Eliminates Aeration Towers</li> <li>- Lowest Cost Alternative Process</li> </ul>	<ul style="list-style-type: none"> <li>- Requires Pilot Plant Testing</li> <li>- Complex Operation</li> <li>- Building, Rapid Mix Basin, and Contact Basin Required</li> <li>- Ongoing Expense for Hydrogen Peroxide</li> <li>- Additional Safety Precautions</li> </ul>	\$ 2,431,500	\$ 250,000	\$ 6,151,000	
4 - Continue Current Operation	<ul style="list-style-type: none"> <li>- No Capital Cost</li> <li>- Effective Removal of H<sub>2</sub>S from Water</li> <li>- No Additional Maintenance Items</li> </ul>	<ul style="list-style-type: none"> <li>- Does not Address Odor Issues</li> <li>- Requires Continued Operation of Aeration Towers</li> </ul>	\$ -	\$ 57,000	\$ 2,174,000	

<sup>1</sup> Biofilter and activated carbon absorption alternatives preliminarily sized for 7 ppmv/100 ppmv average/peak H<sub>2</sub>S concentrations. Biotrickling filter preliminarily sized for 15 ppmv average/peak H<sub>2</sub>S concentrations.

<sup>2</sup> Ozone system alternative preliminarily sized for 150 pounds per day capacity.

<sup>3</sup> Chemical feed system preliminarily sized for 15 mg/L hydrogen peroxide dose.

<sup>4</sup> Alternative 1A, 1B, 1C, and 4 net present value costs include replacement of two aeration towers in five years.

## **ATTACHMENT E**

### Conceptual Engineer's OPCC





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## **Conceptual Engineer's OPCC**

**City of Pittsburg, KS**

### **WTP Odor Control Study**

**Olsson Project No. A21-01910**

**October 2021**

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Alternative 1A - Biofilter  
Olsson Project No. A21-01910  
October 2021

## BIOFILTER CAPITAL COST

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Mobilization, Bonding, Insurance	1	LS	\$ 93,000	\$ 93,000
2	Biofilter Equipment:	1	LS	\$ 1,100,000	\$ 1,100,000
3	Vessel Design				\$ -
4	Engineered Media				\$ -
5	Media Support Flooring				\$ -
6	Exhaust Fan				\$ -
7	Internal Piping				\$ -
8	Controls and Instrumentation				\$ -
9	Reinforced Concrete Vessel	400	CY	\$ 1,500	\$ 600,000
10	Ductwork, Valves, and Fittings	1	LS	\$ 110,000	\$ 110,000
11	Electrical Improvements	1	LS	\$ 40,000	\$ 40,000
<b>Subtotal Probable Construction Cost</b>					<b>\$ 1,943,000</b>
<b>Construction Contingencies (30%)</b>					<b>\$ 583,000</b>
<b>Total Conceptual Construction Cost Estimate</b>					<b>\$ 2,526,000</b>
<b>Engineering Design, Survey, Permitting, Bid/Const. Admin. (25%)</b>					<b>\$ 632,000</b>
<b>Total Probable Project Cost</b>					<b>\$ 3,158,000</b>

## AERATION TOWER REPLACEMENT CAPITAL COST

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Mobilization, Bonding, Insurance	1	LS	\$ 29,000	\$ 29,000
2	Aeration Towers <sup>1</sup>	1	LS	\$ 450,000	\$ 450,000
3	Aeration Tower Installation	1	LS	\$ 135,000	\$ 135,000
4	Aeration Tower Demolition	1	LS	\$ 50,000	\$ 50,000
5	Electrical Improvements	1	LS	\$ 20,000	\$ 20,000
6	Controls and Instrumentation	1	LS	\$ 20,000	\$ 20,000
<b>Subtotal Probable Construction Cost</b>					<b>\$ 704,000</b>
<b>Construction Contingencies (30%)</b>					<b>\$ 211,000</b>
<b>Total Conceptual Construction Cost Estimate</b>					<b>\$ 915,000</b>
<b>Engineering Design, Survey, Permitting, Bid/Const. Admin. (25%)</b>					<b>\$ 229,000</b>
<b>Total Probable Project Cost</b>					<b>\$ 1,144,000</b>

<sup>1</sup> Including two towers, two fans, two fan enclosures, and packing media for two towers

Alternative 1A - Biofilter  
Olsson Project No. A21-01910  
October 2021

## ANNUAL OPERATION AND MAINTENANCE COST

Item	Description	Annual Quantity	Unit	Unit Cost	Total Annual Cost
1	Power	889,300	kWh	\$ 0.13	\$ 116,000
2	Labor	200	Hour	\$ 25.00	\$ 5,000
3	Maintenance and Repair	1	LS	\$ 6,000.00	\$ 6,000
4	Supplies	1	LS	\$ 6,000.00	\$ 6,000
<b>Subtotal Probable Annual Operation and Maintenance Cost</b>					<b>\$ 133,000</b>
<b>Operation and Maintenance Contingencies (30%)</b>					<b>\$ 40,000</b>
<b>Total Probable Annual Operation and Maintenance Cost</b>					<b>\$ 173,000</b>

**TOTAL 20-YEAR PRESENT WORTH COST ESTIMATE, 3% INFLATION<sup>2</sup>: \$ 7,058,000**

<sup>2</sup>Assuming installation of biofilter at present year, replacement of aeration towers at year 5, and operation and maintenance cost incurred annually for 20 years.

**Alternative 1B - Biotrickling Filter**  
**Olsson Project No. A21-01910**  
**October 2021**

## **BIOTRICKLING FILTER CAPITAL COST**

<b>Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization, Bonding, Insurance	1	LS	\$ 60,000	\$ 60,000
2	Biotrickling Filter Equipment:	1	LS	\$ 991,100	\$ 991,100
3	Two Vessels				\$ -
4	Packing Material				\$ -
5	Blower				\$ -
6	Electrical Control Panel				\$ -
7	Water Control Panel w/ Nutrient Dosing System				\$ -
8	Internal Piping				\$ -
9	Reinforced Concrete Pad	50	CY	\$ 1,500	\$ 75,000
10	Ductwork, Valves, and Fittings	1	LS	\$ 102,000	\$ 102,000
11	Electrical Improvements	1	LS	\$ 40,000	\$ 40,000
<b>Subtotal Probable Construction Cost</b>					<b>\$ 1,268,100</b>
<b>Construction Contingencies (30%)</b>					<b>\$ 380,000</b>
<b>Total Conceptual Construction Cost Estimate</b>					<b>\$ 1,648,100</b>
<b>Engineering Design, Survey, Permitting, Bid/Const. Admin. (25%)</b>					<b>\$ 412,000</b>
<b>Total Probable Project Cost</b>					<b>\$ 2,060,100</b>

## **AERATION TOWER REPLACEMENT CAPITAL COST**

<b>Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization, Bonding, Insurance	1	LS	\$ 29,000	\$ 29,000
2	Aeration Towers <sup>1</sup>	1	LS	\$ 450,000	\$ 450,000
3	Aeration Tower Installation	1	LS	\$ 135,000	\$ 135,000
4	Aeration Tower Demolition	1	LS	\$ 50,000	\$ 50,000
5	Electrical Improvements	1	LS	\$ 20,000	\$ 20,000
6	Controls and Instrumentation	1	LS	\$ 20,000	\$ 20,000
<b>Subtotal Probable Construction Cost</b>					<b>\$ 704,000</b>
<b>Construction Contingencies (30%)</b>					<b>\$ 211,000</b>
<b>Total Conceptual Construction Cost Estimate</b>					<b>\$ 915,000</b>
<b>Engineering Design, Survey, Permitting, Bid/Const. Admin. (25%)</b>					<b>\$ 229,000</b>
<b>Total Probable Project Cost</b>					<b>\$ 1,144,000</b>

<sup>1</sup> Including two towers, two fans, two fan enclosures, and packing media for two towers

**Alternative 1B - Biotrickling Filter**  
**Olsson Project No. A21-01910**  
**October 2021**

**ANNUAL OPERATION AND MAINTENANCE COST**

Item	Description	Annual Quantity	Unit	Unit Cost	Total Annual Cost
1	Power	849,000	kWh	\$ 0.13	\$ 111,000
2	Labor	200	Hour	\$ 25.00	\$ 5,000
3	Maintenance and Repair	1	LS	\$ 5,000.00	\$ 5,000
4	Supplies	1	LS	\$ 5,000.00	\$ 5,000
<b>Subtotal Probable Annual Operation and Maintenance Cost</b>					<b>\$ 126,000</b>
<b>Operation and Maintenance Contingencies (30%)</b>					<b>\$ 38,000</b>
<b>Total Probable Annual Operation and Maintenance Cost</b>					<b>\$ 164,000</b>

**TOTAL 20-YEAR PRESENT WORTH COST ESTIMATE, 3% INFLATION<sup>2</sup>: \$ 5,826,000**

<sup>2</sup>Assuming installation of biofilter at present year, replacement of aeration towers at year 5, and operation and maintenance cost incurred annually for 20 years.

**Alternative 1C - Activated Carbon Adsorption**  
**Olsson Project No. A21-01910**  
**October 2021**

**ACTIVATED CARBON ADSORPTION SYSTEM CAPITAL COST**

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Mobilization, Bonding, Insurance	1	LS	\$ 75,000	\$ 75,000
2	Activated Carbon Equipment:	1	LS	\$ 1,300,000	\$ 1,300,000
3	Two Vessels				\$ -
4	Pelletized Media				\$ -
5	FRP Ductwork and Dampers				\$ -
6	Two Blowers				\$ -
7	Electrical Control Panel				\$ -
8	Reinforced Concrete Pad	40	CY	\$ 1,500	\$ 60,000
9	Ductwork, Valves, and Fittings	1	LS	\$ 105,000	\$ 105,000
10	Electrical Improvements	1	LS	\$ 40,000	\$ 40,000
<b>Subtotal Probable Construction Cost</b>					<b>\$ 1,580,000</b>
<b>Construction Contingencies (30%)</b>					<b>\$ 474,000</b>
<b>Total Conceptual Construction Cost Estimate</b>					<b>\$ 2,054,000</b>
<b>Engineering Design, Survey, Permitting, Bid/Const. Admin. (25%)</b>					<b>\$ 514,000</b>
<b>Total Probable Project Cost</b>					<b>\$ 2,568,000</b>

**AERATION TOWER REPLACEMENT CAPITAL COST**

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Mobilization, Bonding, Insurance	1	LS	\$ 29,000	\$ 29,000
2	Aeration Towers <sup>1</sup>	1	LS	\$ 450,000	\$ 450,000
3	Aeration Tower Installation	1	LS	\$ 135,000	\$ 135,000
4	Aeration Tower Demolition	1	LS	\$ 50,000	\$ 50,000
5	Electrical Improvements	1	LS	\$ 20,000	\$ 20,000
6	Controls and Instrumentation	1	LS	\$ 20,000	\$ 20,000
<b>Subtotal Probable Construction Cost</b>					<b>\$ 704,000</b>
<b>Construction Contingencies (30%)</b>					<b>\$ 211,000</b>
<b>Total Conceptual Construction Cost Estimate</b>					<b>\$ 915,000</b>
<b>Engineering Design, Survey, Permitting, Bid/Const. Admin. (25%)</b>					<b>\$ 229,000</b>
<b>Total Probable Project Cost</b>					<b>\$ 1,144,000</b>

<sup>1</sup> Including two towers, two fans, two fan enclosures, and packing media for two towers

**Alternative 1C - Activated Carbon Adsorption**  
**Olsson Project No. A21-01910**  
**October 2021**

**ANNUAL OPERATION AND MAINTENANCE COST**

Item	Description	Annual Quantity	Unit	Unit Cost	Total Annual Cost
1	Power	1,133,000	kWh	\$ 0.13	\$ 148,000
2	Carbon Changeout	1	LS	\$ 55,000.00	\$ 55,000
3	Labor	200	Hour	\$ 25.00	\$ 5,000
4	Maintenance and Repair	1	LS	\$ 7,000.00	\$ 7,000
5	Supplies	1	LS	\$ 7,000.00	\$ 7,000
<b>Subtotal Probable Annual Operation and Maintenance Cost</b>					<b>\$ 222,000</b>
<b>Operation and Maintenance Contingencies (30%)</b>					<b>\$ 67,000</b>
<b>Total Probable Annual Operation and Maintenance Cost</b>					<b>\$ 289,000</b>

**TOTAL 20-YEAR PRESENT WORTH COST ESTIMATE, 3% INFLATION<sup>2</sup>: \$ 8,194,000**

<sup>2</sup>Assuming installation of biofilter at present year, replacement of aeration towers at year 5, and operation and maintenance cost incurred annually for 20 years.



**Alternative 2 - Ozone**  
**Olsson Project No. A21-01910**  
**October 2021**

## CAPITAL COST

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Mobilization, Bonding, Insurance	1	LS	\$ 168,000	\$ 168,000
2	Ozone System	1	LS	\$ 1,755,000	\$ 1,755,000
3	LOX Storage and vaporizer Equipment				\$ -
4	Nitrogen Boost System				\$ -
5	Ozone Generation System (1 Online, 1 Stand-By)				\$ -
6	Cooling Water System				\$ -
7	Ozone Mass Transfer System				\$ -
8	Ozone Destruct System				\$ -
9	Ozone System Master Control Panel				\$ -
10	Instrumentation				\$ -
11	Ozone Contactor	1	LS	\$ 1,000,000	\$ 1,000,000
12	Building	1,600	SF	\$ 250	\$ 400,000
13	Process Piping, Valves, and Fitting	1	LS	\$ 95,000	\$ 95,000
14	Electrical Improvements	1	LS	\$ 60,000	\$ 60,000
15	Aeration Tower Demolition	1	LS	\$ 50,000	\$ 50,000
<b>Subtotal Probable Construction Cost</b>					<b>\$ 3,528,000</b>
<b>Construction Contingencies (30%)</b>					<b>\$ 1,058,000</b>
<b>Total Conceptual Construction Cost Estimate</b>					<b>\$ 4,586,000</b>
<b>Engineering Design, Survey, Permitting, Bid/Const. Admin. (25%)</b>					<b>\$ 1,147,000</b>
<b>Total Probable Project Cost</b>					<b>\$ 5,733,000</b>

## ANNUAL OPERATION AND MAINTENANCE COST

Item	Description	Annual Quantity	Unit	Unit Cost	Total Annual Cost
1	Power	489,000	kWh	\$ 0.13	\$ 64,000
2	LOX	66,000	100 CF	\$ 0.75	\$ 50,000
3	Labor	150	Hour	\$ 25.00	\$ 4,000
4	Maintenance and Repair	1	LS	\$ 9,000.00	\$ 9,000
5	Supplies	1	LS	\$ 9,000.00	\$ 9,000
<b>Subtotal Probable Annual Operation and Maintenance Cost</b>					<b>\$ 136,000</b>
<b>Operation and Maintenance Contingencies (30%)</b>					<b>\$ 41,000</b>
<b>Total Probable Annual Operation and Maintenance Cost</b>					<b>\$ 177,000</b>

**TOTAL 20-YEAR PRESENT WORTH COST ESTIMATE, 3% INFLATION: \$ 8,366,000**

**Alternative 3 - Chemical Feed**  
**Olsson Project No. A21-01910**  
**October 2021**

## CAPITAL COST

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Mobilization, Bonding, Insurance	1	LS	\$ 69,000	\$ 69,000
2	Chemical Feed Equipment	1	LS	\$ 200,000	\$ 200,000
3	Two Bulk Storage Tanks				\$ -
4	Two Chemical Transfer Pumps				\$ -
5	Day Storage Tank				\$ -
6	Two Metering Pumps				\$ -
7	Local Control Panel				\$ -
8	Chemical Piping, Valves, Fittings, and Pipe Supports	150	LF	\$ 800	\$ 120,000
9	Chemical Feed Building	750	SF	\$ 250	\$ 187,500
10	Tankard Loading Area with Secondary Containment	1	LS	\$ 35,000	\$ 35,000
11	Contact Basin	1	LS	\$ 600,000	\$ 600,000
12	Mixing	1	LS	\$ 50,000	\$ 50,000
13	Water Piping, Valves, and Fittings	1	LS	\$ 75,000	\$ 75,000
14	Electrical Improvements	1	LS	\$ 60,000	\$ 60,000
15	Aeration Tower Demolition	1	LS	\$ 50,000	\$ 50,000
16	Pilot Plant Testing	1	LS	\$ 50,000	\$ 50,000
<b>Subtotal Probable Construction Cost</b>					<b>\$ 1,496,500</b>
<b>Construction Contingencies (30%)</b>					<b>\$ 449,000</b>
<b>Total Conceptual Construction Cost Estimate</b>					<b>\$ 1,945,500</b>
<b>Engineering Design, Survey, Permitting, Bid/Const. Admin. (25%)</b>					<b>\$ 486,000</b>
<b>Total Probable Project Cost</b>					<b>\$ 2,431,500</b>

## ANNUAL OPERATION AND MAINTENANCE COST

Item	Description	Annual Quantity	Unit	Unit Cost	Total Annual Cost
1	Power	250,000	kWh	\$ 0.13	\$ 33,000
2	Hydrogen Peroxide (50 wt%)	36,500	gal	\$ 4.00	\$ 146,000
3	Labor	360	Hour	\$ 25.00	\$ 9,000
4	Maintenance and Repair	1	LS	\$ 2,000.00	\$ 2,000
5	Supplies	1	LS	\$ 2,000.00	\$ 2,000
<b>Subtotal Probable Annual Operation and Maintenance Cost</b>					<b>\$ 192,000</b>
<b>Operation and Maintenance Contingencies (30%)</b>					<b>\$ 58,000</b>
<b>Total Probable Annual Operation and Maintenance Cost</b>					<b>\$ 250,000</b>

**TOTAL 20-YEAR PRESENT WORTH COST ESTIMATE, 3% INFLATION: \$ 6,151,000**

**Alternative 4 - Continue Current Operation**  
**Olsson Project No. A21-01910**  
**October 2021**

## **AERATION TOWER REPLACEMENT CAPITAL COST**

<b>Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization, Bonding, Insurance	1	LS	\$ 29,000	\$ 29,000
2	Aeration Towers <sup>1</sup>	1	LS	\$ 450,000	\$ 450,000
3	Aeration Tower Installation	1	LS	\$ 135,000	\$ 135,000
4	Aeration Tower Demolition	1	LS	\$ 50,000	\$ 50,000
5	Electrical Improvements	1	LS	\$ 20,000	\$ 20,000
6	Controls and Instrumentation	1	LS	\$ 20,000	\$ 20,000
<b>Subtotal Probable Construction Cost</b>					<b>\$ 704,000</b>
<b>Construction Contingencies (30%)</b>					<b>\$ 211,000</b>
<b>Total Conceptual Construction Cost Estimate</b>					<b>\$ 915,000</b>
<b>Engineering Design, Survey, Permitting, Bid/Const. Admin. (25%)</b>					<b>\$ 229,000</b>
<b>Total Probable Project Cost</b>					<b>\$ 1,144,000</b>

<sup>1</sup> Including two towers, two fans, two fan enclosures, and packing media for two towers

## **ANNUAL OPERATION AND MAINTENANCE COST**

<b>Item</b>	<b>Description</b>	<b>Annual Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Annual Cost</b>
1	Power	261,300	kWh	\$ 0.13	\$ 34,000
2	Labor	150	Hour	\$ 25.00	\$ 4,000
3	Maintenance and Repair	1	LS	\$ 3,000.00	\$ 3,000
4	Supplies	1	LS	\$ 3,000.00	\$ 3,000
<b>Subtotal Probable Annual Operation and Maintenance Cost</b>					<b>\$ 44,000</b>
<b>Operation and Maintenance Contingencies (30%)</b>					<b>\$ 13,000</b>
<b>Total Probable Annual Operation and Maintenance Cost</b>					<b>\$ 57,000</b>

**TOTAL 20-YEAR PRESENT WORTH COST ESTIMATE, 3% INFLATION<sup>2</sup>: \$ 2,174,000**

<sup>2</sup> Assuming replacement of aeration towers at year 5 and operation and maintenance cost incurred annually for 20 years.