

OAK RIDGE CITY COUNCIL MEETING

Municipal Building Courtroom

October 9, 2017 - 7:00 p.m.

AGENDA

I. INVOCATION

Barbara McCord, Chairperson of the Spiritual Assembly of the Baha'is of Oak Ridge

II. PLEDGE OF ALLEGIANCE

Ben Dallas, student at Jefferson Middle School

III. ROLL CALL

IV. PROCLAMATIONS AND PUBLIC RECOGNITIONS

Public Recognitions

Proclamations

- a. A proclamation designating October, 2017 as Domestic Violence Awareness Month
- b. A proclamation designating October, 2017 as Fire Prevention Awareness Month
- c. A proclamation designating October 23-31, 2017 as Red Ribbon Week

V. SPECIAL REPORTS

VI. CONSENT AGENDA

- a. Approval of the September 11, 2017 City Council regular meeting minutes
- b. Approval of the September 19, 2017 City Council special meeting minutes
- c. A RESOLUTION AUTHORIZING THE TRANSFER OF A SURPLUS ANIMAL CONTROL VEHICLE TO THE TOWN OF OLIVER SPRINGS, TENNESSEE, AT NO COST FOR THEIR USE.
- d. A RESOLUTION AUTHORIZING THE TRANSFER OF A SURPLUS 1992 FIRE TRUCK (#353) TO BRICEVILLE VOLUNTEER FIRE DEPARTMENT, BRICEVILLE, TENNESSEE, AT NO COST FOR THEIR USE.
- e. A RESOLUTION AUTHORIZING THE PURCHASE AND INSTALLATION OF SIX (6) LARGE CEILING FANS FROM DELTA T CORPORATION DBA BIG ASS SOLUTIONS, LEXINGTON, KENTUCKY, FOR USE AT THE CENTRAL SERVICES COMPLEX IN THE ESTIMATED AMOUNT OF \$63,738.00.

VII. PUBLIC HEARINGS AND FIRST READING OF ORDINANCES

First Reading

- a. AN ORDINANCE TO AMEND ORDINANCE NO. 2, TITLED "THE ZONING ORDINANCE OF THE CITY OF OAK RIDGE, TENNESSEE, BY DELETING SUBPARTS (D)(3) AND (D)(4) OF SECTION 11.01, TITLED "VEHICLE ACCESS CONTROL," AND SUBSTITUTING THEREFOR NEW SUBPARTS (D)(3) AND (D)(4) RELATIVE TO DRIVEWAY LOCATIONS AND SPACING.
- b. AN ORDINANCE TO AMEND ORDINANCE NO. 2, TITLED "THE ZONING ORDINANCE OF THE CITY OF OAK RIDGE, TENNESSEE," BY AMENDING THE ZONING MAP WHICH IS MADE A PART OF THE ORDINANCE BY CHANGING THE ZONING DISTRICT OF PARCEL 047.00, ANDERSON COUNTY TAX MAP 094J, GROUP D, (APPROXIMATELY 0.45 ACRES) FROM B-3, ROADSIDE BUSINESS DISTRICT, TO B-2, GENERAL BUSINESS DISTRICT, SAID PARCEL BEING LOCATED AT 500 OAK RIDGE TURNPIKE.
- c. AN ORDINANCE TO AMEND TITLE 15, TITLED "MOTOR VEHICLES, TRAFFIC AND PARKING," CHAPTER 5, TITLED "SPEED REGULATIONS," OF THE CODE OF ORDINANCES, CITY OF OAK RIDGE, TENNESSEE, TO LOWER THE SPEED LIMIT ON STATE ROUTE 95 (SR-95)(OAK RIDGE TURNPIKE) BETWEEN THE SR-95/SR-58 INTERCHANGE TO THE OAK RIDGE CITY LIMITS.

VIII. FINAL ADOPTION OF ORDINANCES

Public Hearing

- a. AN ORDINANCE TO AMEND ORDINANCE NO. 2, TITLED "THE ZONING ORDINANCE OF THE CITY OF OAK RIDGE, TENNESSEE," BY AMENDING SECTION 8.03, TITLED "IND-3, INDUSTRIAL DISTRICTS," TO ADD AIRPORTS AS A PERMITTED PRINCIPAL USE AND TO DELETE AIRPORTS AS A USE REQUIRING BOARD OF ZONING APPEALS APPROVAL.
- b. AN ORDINANCE TO AMEND SECTION 3-601, TITLED "ADMINISTRATIVE HEARING OFFICER," OF THE CODE OF ORDINANCES, CITY OF OAK RIDGE, TENNESSEE, BY DELETING SUBSECTION (1) IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SUBSECTION (1) TO EXPAND THE JURISDICTION OF THE ADMINISTRATIVE HEARING OFFICER FOR COMPLIANCE WITH STATE LAW. (No public hearing required.)

IX. RESOLUTIONS

- a. A RESOLUTION APPROVING A PROFESSIONAL SERVICES AGREEMENT WITH WACHSWATER SERVICES, BUFFALO GROVE, ILLINOIS, FOR A SYSTEM-WIDE WATER LEAK DETECTION SURVEY IN THE ESTIMATED AMOUNT OF \$103,429.00.
- b. A RESOLUTION TO AUTHORIZE AGREEMENTS WITH STUDIO FOUR DESIGN, INC., KNOXVILLE, TENNESSEE, FOR ARCHITECTURAL, INTERIOR DESIGN, AND CONSULTING ENGINEERING SERVICES FOR (1) THE NEW PRESCHOOL BUILDING IN THE ESTIMATED AMOUNT OF \$574,700.00 AND (2) THE NEW SENIOR CENTER BUILDING IN THE ESTIMATED AMOUNT OF \$196,630.00.

- c. A RESOLUTION AUTHORIZING THE ISSUANCE OF GENERAL OBLIGATION BONDS OF THE CITY OF OAK RIDGE, TENNESSEE IN THE AGGREGATE PRINCIPAL AMOUNT OF NOT TO EXCEED \$21,350.000, IN ONE OR MORE SERIES; MAKING PROVISION FOR THE ISSUANCE, SALE, AND PAYMENT OF SAID BONDS, ESTABLISHING THE TERMS THEREOF AND THE DISPOSITION OF PROCEEDS THEREFROM; AND PROVIDING FOR THE LEVY OF TAXES FOR THE PAYMENT OF PRINCIPAL OF, PREMIUM, IF ANY, AND INTEREST ON THE BONDS.

X. APPEARANCE OF CITIZENS

XI. ELECTIONS/APPOINTMENTS, ANNOUNCEMENTS AND SCHEDULING

a. Elections/Appointments

b. Announcements

c. Scheduling

XII. COUNCIL REQUESTS FOR NEW BUSINESS ITEMS OR FUTURE BRIEFINGS

XIII. SUMMARY OF CURRENT EVENTS

a. CITY MANAGER'S REPORT

b. CITY ATTORNEY'S REPORT

XIV. ADJOURNMENT

PROCLAMATIONS

CITY CLERK MEMORANDUM
17-26

DATE: September 29, 2017
TO: Honorable Mayor and Members of City Council
FROM: Mary Beth Hickman, City Clerk
SUBJECT: PROCLAMATIONS FOR THE OCTOBER 9, 2017 CITY COUNCIL MEETING AGENDA

The following proclamation are presented for the October 9, 2017 City Council meeting for the City Council's consideration:

A proclamation designating October, 2017 as Domestic Violence Awareness Month

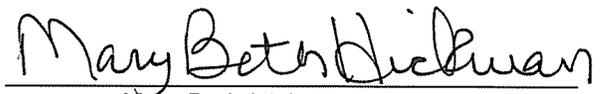
This proclamation was requested by Maggie McNally, Director of Anderson County Services for the YWCA of Knoxville and the Tennessee Valley, through Mayor Pro Tem Rick Chinn, to designate October, 2017 as Domestic Violence Awareness Month.

A proclamation designating October, 2017 as Fire Prevention Awareness Month

This proclamation was requested by Travis Solomon, Oak Ridge Fire Marshal, to designate October, 2017 as Fire Prevention Awareness Month.

A proclamation designating October 23-31, 2017 as Red Ribbon Week

This proclamation was requested by Stacey Pratt, Project Director with Allies for Substance Abuse Prevention of Anderson County, to designate October 23-31, 2017 as Red Ribbon Week in order to bring awareness to substance abuse and prevention.


Mary Beth Hickman

Attachments:

Proclamation designating October, 2017 as Domestic Violence Awareness Month
Proclamation designating October, 2017 as Fire Prevention Awareness Month
Proclamation designating October 23-31, 2017 as Red Ribbon Week

PROCLAMATION

WHEREAS, one in three women will be a victim of domestic violence at some point in their lifetime; and

WHEREAS, in 2016, the Oak Ridge Police Department reported 149 domestic incidents; and

WHEREAS, across Tennessee, 51.3 percent of “crimes reported against persons” were domestic related in 2016; and

WHEREAS, across Tennessee, there were 77,762 domestic violence victims as reported by TBI Crimes in Tennessee, 2016; and

WHEREAS, in 2016, the YWCA Knoxville and the Tennessee Valley assisted with the completion of 278 order of protection petitions, served 1,400 victims of domestic violence, received 5,286 volunteer hours and has made its mission to empower women; and

WHEREAS, the YWCA Knoxville and the Tennessee Valley is on a mission to support victims of domestic violence and has been providing domestic violence services for almost thirty years, seeking to ensure that victims are safe, families are safe, and communities are safe; and

WHEREAS, the YWCA Knoxville and the Tennessee Valley is on a mission to prevent domestic violence with community outreach and education, while continuing to provide services to victims in Oak Ridge and throughout Anderson County; and

WHEREAS, each year, October is proclaimed as National Domestic Violence Awareness Month to bring awareness to the right to be free from violence and abuse and recognize that more work remains until every individual is able to live free from fear and abuse.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE that the month of October, 2017 be proclaimed

DOMESTIC VIOLENCE AWARENESS MONTH

in the City of Oak Ridge, Tennessee, and that all citizens be encouraged speak out against domestic violence and to support local efforts to assist victim of these crimes in finding the help and healing they need.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Great Seal of the City of Oak Ridge to be affixed this the 9th day of October in the year 2017.

WARREN L. GOOCH, MAYOR

PROCLAMATION

WHEREAS, the Great Chicago Fire of 1871 killed more than 250 people, left 100,000 homeless, destroyed more than 17,400 structures and burned more than 2,000 acres; and

WHEREAS, at the same time the Peshtigo Fire also roared through Northeast Wisconsin, burning down 16 towns, killing 1,152 people and scorching 1.2 million acres, making it the most devastating forest fire in American history; and

WHEREAS, both blazes produced countless tales of bravery and heroism, and also changed the way firefighters and public officials thought about fire safety; and

WHEREAS, on the 40th anniversary of the Great Chicago Fire, the Fire Marshals Association of North America (today known as the International Fire Marshals Association) decided that the anniversary should be observed in a way that would keep the public informed about the importance of fire prevention; and

WHEREAS, in 1920, President Woodrow Wilson issued the first National Fire Prevention proclamation; and

WHEREAS, the President of the United States has signed a proclamation proclaiming a national observance every year since 1925, making it the longest running public health and safety observance on record; and

WHEREAS, the Oak Ridge Fire Department will provide in home assistance with smoke alarm installation and home escape planning and conduct educational programs within our school system to increase awareness of the importance of fire prevention and safety; and

WHEREAS, a Fire Prevention Parade and Celebration was conducted on October 7, 2017 to celebrate and provide a safety message to the public.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE that the month of October, 2017 be proclaimed

FIRE PREVENTION MONTH

in the City of Oak Ridge, Tennessee, and that all citizens be encouraged to practice fire prevention and safety by checking their smoke alarms and designing a home escape plan.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Great Seal of the City of Oak Ridge to be affixed this the 9th day of October in the year 2017.

WARREN L. GOOCH, MAYOR

PROCLAMATION

WHEREAS, Anderson County, like hundreds of other counties across the country, has felt the devastation of the consequences of substance abuse as it has risen to crisis levels; and

WHEREAS, the Allies for Substance Abuse Prevention Ambassadors Youth Coalition have been working in Oak Ridge and throughout Anderson County to increase knowledge, reduce access and encourage a drug-free lifestyle; and

WHEREAS, the red ribbon was chosen as a symbol commemorating the work of Enrique "Kiki" Camarena, a Drug Enforcement Administration agent, who was murdered in the line of duty and has come to represent the belief that one person CAN make a difference; and

WHEREAS, the I AM ONE campaign, promoted by the Anderson County Underage Drinking Task Force, has identified that we will have the greatest impact on this crisis if every citizen proclaims "I AM ONE" and does their part to be proactive against substance abuse in our community ; and

WHEREAS, because success will not occur overnight, our patience and continued commitment to substance abuse prevention are imperative; and

WHEREAS, the Red Ribbon Campaign was established by Congress in 1988 to promote this belief and encourage a drug-free lifestyle and involvement in drug prevention efforts.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE that October, 23-31, 2017 be proclaimed

RED RIBBON WEEK

in the City of Oak Ridge, Tennessee, and that all citizens, businesses, public and private agencies, media, service organizations, religious and educational institutions to participate in the Red Ribbon Week activities throughout this time, as well as to wear and display red ribbons to illustrate a commitment to a drug-free Oak Ridge.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Great Seal of the City of Oak Ridge to be affixed this the 9th day of October in the year 2017.

WARREN L. GOOCH, MAYOR

CONSENT AGENDA

OAK RIDGE CITY COUNCIL MEETING
Municipal Building Courtroom

September 11, 2017

Minutes

The regular meeting of the City Council of the City of Oak Ridge, Tennessee convened at 7:00 p.m. on September 11, 2017 in the Courtroom of the Municipal Building with Mayor Warren L. Gooch presiding.

INVOCATION

A moment of silence and a tolling of the bell was held in remembrance of September 11, 2001.

The invocation was given by Pastor Larry Dipboye of Grace Covenant Church.

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Jefferson Middle School student Eden Hatmaker.

ROLL CALL

Upon roll call, the following councilmembers were present: Councilmember Kelly Callison; Mayor Pro Tem Rick Chinn, Jr.; Councilmember Jim Dodson; Mayor Warren L. Gooch; Councilmember Charles J. Hope, Jr.; Councilmember Ellen D. Smith; and Councilmember Hans Vogel.

Also present were Mark S. Watson, City Manager; Ken Krushenski, City Attorney; Janice McGinnis, Finance Director and Mary Beth Hickman, City Clerk.

PROCLAMATIONS AND PUBLIC RECOGNITIONS

Proclamations

A proclamation recognizing honoring Oak Ridge High School Assistant Football Coach Winston Russell for his receipt of the 2017 CAREacter Star East Tennessee Service Award Assistant Coaching
Councilmember Smith moved for approval, and Mayor Pro Tem Chinn seconded. The proclamation was approved unanimously by voice vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

A proclamation designating September, 2017 as Suicide Prevention Awareness Month
Mayor Pro Tem Chinn moved for approval, and Councilmember Smith seconded. The proclamation was approved unanimously by voice vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

A proclamation designating Saturday, October 7, 2017 as Historically Black Colleges and Universities Expo Day
Mayor Pro Tem Chinn moved for approval, and Councilmember Vogel seconded. The proclamation was approved unanimously by voice vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

SPECIAL REPORTS

A RESOLUTION CONDEMNING ALL FORMS OF RACISM, BIGOTRY, ANTI-SEMITISM, DISCRIMINATION, HATRED, AND VIOLENCE.

Mayor Pro Tem Chinn moved for approval of the resolution, and Councilmember Callison seconded. The resolution was approved unanimously by voice vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting “Aye.”

CONSENT AGENDA

Mayor Pro Tem Chinn moved for adoption of the Consent Agenda, and Councilmember Callison seconded.

The Consent Agenda was adopted unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting “Aye.”

Approval of the August 14, 2017 City Council regular meeting minutes.

Approval of the 2017-2018 Youth Advisory Board Goals and Objectives

A RESOLUTION AUTHORIZING THE PURCHASE OF ONE (1) REPLACEMENT BACKHOE FROM STOWERS MACHINERY CORPORATION, KNOXVILLE, TENNESSEE, FOR USE BY THE PUBLIC WORKS DEPARTMENT IN THE ESTIMATED AMOUNT OF \$102,887.57.

A RESOLUTION TO AMEND RESOLUTION 8-85-2017 TO ADD A DUAL EMPLOYEE FAMILY OPTION TO THE CITY'S MEDICAL INSURANCE PREMIUM PAYMENT POLICY.

Mayor Pro Tem Chinn moved to amend the agenda order to consider the following resolution prior to consideration of ordinances:

A RESOLUTION ACCEPTING THE REPORT FROM MCGRATH HUMAN RESOURCES GROUP, AUTHORIZING THE CITY MANAGER TO MOVE FORWARD WITH A PHASED APPROACH TO IMPLEMENT RECOMMENDATIONS FROM THE REPORT, APPROVING THE POSITION CLASSIFICATION PLAN FOR FY2018 EFFECTIVE WITH THE OCTOBER 8, 2017 PAY PERIOD, AND APPROVING THE PAY GRADE SCHEDULE FOR FY2018 EFFECTIVE WITH THE OCTOBER 8, 2017 PAY PERIOD.

Councilmember Smith seconded, and the motion to amend the agenda passed unanimously.

City Manager Mark Watson provided an overview of the resolution, and Director of Administrative Services Bruce Applegate answered questions from Council.

Councilmember Smith asked if there was a recommendation from the Personnel Advisory Board as one was not provided in the packet. Bruce Applegate stated that the vote was unanimous by the Personnel Advisory Board to recommend approval.

Councilmember Hope expressed concerns that specialized employees doing more than one job may be placed on a lower step than they are now due to reclassification.

Councilmember Vogel expressed appreciation for the phased-in implementation strategy but has concerns about the year 2 and year 3 implementation of the Fire Department schedule.

Mayor Gooch stated that he will never support the City going into the full-scale EMS business.

Councilmember Callison commended Bruce Applegate and other City staff that have worked on the compensation study.

The resolution was approved by board vote with Councilmembers Callison, Dodson, Hope, Smith, Mayor Gooch and Mayor Pro Tem Chinn voting “Aye,” and Councilmember Vogel voting “No.”

PUBLIC HEARINGS AND FIRST READING OF ORDINANCES

First Reading of Ordinances

AN ORDINANCE TO AMEND ORDINANCE NO. 2, TITLED "THE ZONING ORDINANCE OF THE CITY OF OAK RIDGE, TENNESSEE," BY AMENDING SECTION 8.03, TITLED "IND-3, INDUSTRIAL DISTRICTS," TO ADD AIRPORTS AS A PERMITTED PRINCIPAL USE AND TO DELETE AIRPORTS AS A USE REQUIRING BOARD OF ZONING APPEALS APPROVAL.

Councilmember Dodson moved to approve the ordinance, and Mayor Pro Tem Chinn seconded. The ordinance was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

AN ORDINANCE TO AMEND SECTION 3-601, TITLED "ADMINISTRATIVE HEARING OFFICER" OF THE CODE OF ORDINANCES, CITY OF OAK RIDGE, TENNESSEE, BY DELETING SUBSECTION (1) IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SUBSECTION (1) TO EXPAND THE JURISDICTION OF THE ADMINISTRATIVE HEARING OFFICER FOR COMPLIANCE WITH STATE LAW.

Councilmember Smith moved for approval of the ordinance, and Councilmember Callison seconded. City Attorney Ken Krushenski provided an overview of the ordinance.

The ordinance was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

AN ORDINANCE TO AMEND ORDINANCE NO. 27-85, TITLED "A PERSONNEL PLAN FOR EMPLOYEES OF THE CITY OF OAK RIDGE, TENNESSEE," AS AMENDED, BY DELETING SUBSECTION 6.2.B, TITLED "OVERTIME COMPENSATION," AND SUBSTITUTING THEREFOR A NEW SUBSECTION 6.2.B WITH THE SAME TITLE; BY DELETING SECTION 6.4, TITLED "STAND-BY PAY," AND SUBSTITUTING THEREFOR A NEW SECTION 6.4 WITH THE SAME TITLE; BY DELETING SECTION 6.6, TITLED "FIRE DEPARTMENT SUPPLEMENTAL PAY," WITHOUT REPLACEMENT; BY DELETING SECTION 6.7, TITLED "FIRE SPECIALISTS," WITHOUT REPLACEMENT; BY DELETING SUBSECTION 7.2.C, TITLED "RESIDENCY POLICY," AND SUBSTITUTING THEREFOR A NEW SUBSECTION 7.2.C WITH THE SAME TITLE; BY DELETING SUBSECTION 7.3.F, TITLED "TEMPORARY APPOINTMENT," AND SUBSTITUTING THEREFOR A NEW SUBSECTION 7.3.F WITH THE SAME TITLE; BY DELETING SECTION 10.3, TITLED "GRIEVANCE PROCEDURE," AND SUBSTITUTING THEREFOR A NEW SECTION 10.3 WITH THE SAME TITLE; AND BY DELETING SECTION 10.4, TITLED "ABANDONMENT OF GRIEVANCE," AND SUBSTITUTING THEREFOR A NEW SECTION 10.4 WITH THE SAME TITLE, FOR THE PURPOSE OF UPDATING THE PERSONNEL PLAN.

Mayor Pro Tem Chinn moved for approval of the ordinance, and Councilmember Callison seconded. City Manager Mark Watson provided an overview of the ordinance, and Administrative Services Director Bruce Applegate answered questions from Council.

The ordinance was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

FINAL ADOPTION OF ORDINANCES

AN ORDINANCE TO AMEND TITLE 8, TITLED "ALCOHOLIC BEVERAGES," CHAPTER 3, TITLED "BEVERAGES EXCEEDING FIVE PER CENT ALCOHOL – RETAILERS GENERALLY," SECTION 8-324, TITLED "CONSUMPTION OF BEVERAGES ON PREMISES PROHIBITED," OF THE CODE OF

ORDINANCES, CITY OF OAK RIDGE, TENNESSEE, TO GIVE RETAIL LIQUOR STORES THE ABILITY TO OFFER SAMPLES AND TASTINGS IF CONDUCTED IN ACCORDANCE WITH STATE LAW.

Councilmember Smith moved for adoption of the ordinance, and Mayor Pro Tem Chinn seconded.

The ordinance was adopted unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

RESOLUTIONS

A RESOLUTION HONORING JIM HENRY FOR HIS DEDICATION TO THE RESIDENTS OF ROANE COUNTY AND TENNESSEE AND TO PROCLAIM OCTOBER 2, 2017 AS JIM HENRY DAY.

Councilmember Dodson moved for approval of the resolution, and Mayor Pro Tem Chinn seconded. Several Councilmembers spoke in favor of the resolution.

A RESOLUTION AWARDED A CONTRACT (FY2018-001) TO DESIGN & CONSTRUCTION SERVICES, INC, KNOXVILLE, TENNESSEE, FOR THE TURTLE PARK PUMP STATION IMPROVEMENT PROJECT PHASE II IN THE ESTIMATED AMOUNT OF \$2,168,000.00.

Councilmember Smith moved for approval of the resolution, and Councilmember Callison seconded. Public Works Director Shira McWaters provided an overview of the resolution and answered questions from Council.

The resolution was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

A RESOLUTION APPROVING A PROFESSIONAL SERVICES AGREEMENT WITH LDA ENGINEERING, ALCOA, TENNESSEE, FOR ENGINEERING SERVICES IN CONNECTION WITH THE DESIGN AND CONSTRUCTION OF A NEW WATER MAIN ON TENNESSEE AVENUE BETWEEN NEW YORK AVENUE AND GEORGIA AVENUE AN AMOUNT NOT TO EXCEED \$248,500.00.

Mayor Pro Tem Chinn moved for approval of the resolution, and Councilmember Callison seconded. Public Works Director Shira McWaters provided an overview of the resolution and answered questions from Council.

The resolution was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

A RESOLUTION ACCEPTING CERTAIN INFRASTRUCTURE AT THE PRESERVE AT CLINCH RIVER (FORMERLY RARITY RIDGE) PHASE 8, SUBAREA O, SECTION 2, FOR PERPETUAL MAINTENANCE.

Councilmember Dodson moved for approval of the resolution, and Councilmember Vogel seconded. The resolution was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

A RESOLUTION APPROVING THE STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION'S CONSULTANT SELECTION POLICY.

Mayor Pro Tem Chinn moved for approval of the resolution, and Councilmember Vogel seconded. Recreation and Parks Director Jon Hetrick provided an overview of the resolution and answered questions from Council.

The resolution was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

A RESOLUTION APPROVING A CONTRACT WITH FIRST PLACE FINISH, INC., OAK RIDGE, TENNESSEE, TO CONSTRUCT A NEW STRUCTURE TO SUPPORT THE INTERNATIONAL FRIENDSHIP BELL AND ASSOCIATED SITE WORK SUBJECT TO SUCCESSFUL NEGOTIATIONS TO REDUCE THE SCOPE OF WORK TO MEET AVAILABLE FUNDING IN AN AMOUNT NOT TO EXCEED \$440,000.00.

Councilmember Dodson moved for approval of the resolution, and Councilmember Smith seconded. City Manager Mark Watson provided an overview of the resolution, and Recreation and Parks Director Jon Hetrick answered questions from Council.

The resolution was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

A RESOLUTION ESTABLISHING NEW ELECTRIC RETAIL RATES EFFECTIVE OCTOBER 1, 2017 TO ACCOUNT FOR TVA'S WHOLESALE RATE ADJUSTMENT.

Mayor Pro Tem Chinn moved for approval of the resolution, and Councilmember Smith seconded. Electric Department Director Jack Suggs provided an overview of the resolution and answered questions from Council.

The resolution was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

A RESOLUTION AUTHORIZING THE CITY TO ENTER INTO A CONTRACT WITH THE OAK RIDGE BOARD OF EDUCATION SETTING FORTH THE SCHOOLS' ANNUAL REIMBURSEMENT OBLIGATION TO THE CITY FOR THE ENERGY SAVINGS PROJECT SHOULD THE CITY MOVE FORWARD WITH THE CONTRACT ENERGY SYSTEMS GROUP, LLC, AS AUTHORIZED BY RESOLUTION 8-92-2017.

Councilmember Smith moved for approval of the resolution, and Mayor Pro Tem Chinn seconded. City Manager Mark Watson provided an overview of the resolution and answered questions from Council.

The resolution was adopted unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting "Aye."

APPEARANCE OF CITIZENS

Joy Henderson, 103 Paris Lane, Oak Ridge, addressed Council regarding the MORE2 energy savings program. She thanked the City, TVA, ADFAC, Codes Enforcement, Gilmartin Engineering, Appalachian Resource, and A-1 Certified and was happy with the entire project.

ELECTIONS/APPOINTMENTS, ANNOUNCEMENTS AND SCHEDULING

Elections/Appointments

Announcements

City Manager Mark Watson announced that there will be a special called meeting prior to the September 19th work session in the courtroom. He also announced that the Planning Commission and representatives from the Anderson County Chamber of Commerce Government/Community Relations Committee will be attending the work session.

Scheduling

COUNCIL REQUESTS FOR NEW BUSINESS ITEMS OR FUTURE BRIEFINGS

Councilmember Vogel requested an update regarding the golf course. City Manager Mark Watson stated that the City intends for continuous operation of the golf course and continues discussions with Billy Kasper Golf.

Councilmember Hope asked if there was going to be a committee formed to work on issues with the golf course. City Manager Mark Watson stated it is a little early but that the Budget and Finance Committee will be continually briefed on issues as they arise.

Councilmember Dodson requested that the City Council consider moving the location of the work sessions to various schools in the community.

SUMMARY OF CURRENT EVENTS

CITY MANAGER'S REPORT

City Manager Mark Watson discussed an upcoming meeting with representatives from the Windrow Phillips group on October 10-11.

CITY ATTORNEY'S REPORT

ADJOURNMENT: 8:57 p.m.

OAK RIDGE CITY COUNCIL SPECIAL MEETING
Municipal Building Courtroom

September 19, 2017

Minutes

The special meeting of the City Council of the City of Oak Ridge, Tennessee convened at 8:11 p.m. on September 19, 2017 in the Courtroom of the Municipal Building with Warren L. Gooch presiding.

ROLL CALL

Upon roll call the following councilmembers were present: Councilmember Kelly Callison; Mayor Pro Tem Rick Chinn, Jr.; Councilmember Jim Dodson; Mayor Warren L. Gooch; Councilmember Charles J. Hope, Jr.; Councilmember Ellen Smith and Councilmember Hans Vogel.

Also present were Mark S. Watson, City Manager; Janice E. McGinnis, Mary Beth Hickman, City Clerk; and Kenneth R. Krushenski, City Attorney.

FINAL ADOPTION OF ORDINANCES

AN ORDINANCE TO AMEND ORDINANCE NO. 27-85, TITLED "A PERSONNEL PLAN FOR EMPLOYEES OF THE CITY OF OAK RIDGE, TENNESSEE," AS AMENDED, BY DELETING SUBSECTION 6.2.B, TITLED "OVERTIME COMPENSATION," AND SUBSTITUTING THEREFOR A NEW SUBSECTION 6.2.B WITH THE SAME TITLE; BY DELETING SECTION 6.4, TITLED "STAND-BY PAY," AND SUBSTITUTING THEREFOR A NEW SECTION 6.4 WITH THE SAME TITLE; BY DELETING SECTION 6.6, TITLED "FIRE DEPARTMENT SUPPLEMENTAL PAY," WITHOUT REPLACEMENT; BY DELETING SECTION 6.7, TITLED "FIRE SPECIALISTS," WITHOUT REPLACEMENT; BY DELETING SUBSECTION 7.2.C, TITLED "RESIDENCY POLICY," AND SUBSTITUTING THEREFOR A NEW SUBSECTION 7.2.C WITH THE SAME TITLE; BY DELETING SUBSECTION 7.3.F, TITLED "TEMPORARY APPOINTMENT," AND SUBSTITUTING THEREFOR A NEW SUBSECTION 7.3.F WITH THE SAME TITLE; BY DELETING SECTION 10.3, TITLED "GRIEVANCE PROCEDURE," AND SUBSTITUTING THEREFOR A NEW SECTION 10.3 WITH THE SAME TITLE; AND BY DELETING SECTION 10.4, TITLED "ABANDONMENT OF GRIEVANCE," AND SUBSTITUTING THEREFOR A NEW SECTION 10.4 WITH THE SAME TITLE, FOR THE PURPOSE OF UPDATING THE PERSONNEL PLAN.

Councilmember Dodson moved for adoption of the ordinance, and Councilmember Hope seconded. Administrative Services Director Bruce Applegate answered questions from Council.

Councilmember Vogel moved to amend the ordinance to strike the language "by deleting section 6.7, titled 'fire specialists,' without replacement," and Councilmember Vogel seconded.

Councilman Vogel expressed concern about deleting the fire specialist language when there is a line item in the Fire Department's budget pertaining to it. He stated that he was concerned about where the money would be transferred to and that deleting the fire specialist would impact levels of service.

The amendment was not adopted, with Councilmembers Dodson and Vogel voting "Aye," and Councilmembers Callison, Hope and Smith, Mayor Gooch and Mayor Pro Tem Chinn voting "No."

Mayor Gooch stated his concerns about the correlation between reduction in overtime with levels of service. He requested a commitment from the City Manager that this issue as well as other concerns that were raised would be addressed with Council in future work sessions. The City Manager stated that they would be.

The ordinance was adopted by board vote with Councilmembers Callison, Dodson, Hope and Smith, Mayor Gooch and Mayor Pro Tem Chinn voting “Aye” and Councilmember Vogel voting “No.”

RESOLUTION

INITIAL RESOLUTION AUTHORIZING THE ISSUANCE OF NOT TO EXCEED FOURTEEN MILLION, THREE HUNDRED TWENTY-FIVE THOUSAND AND NO/100 DOLLARS (\$14,325,000) GENERAL OBLIGATION BONDS OF THE CITY OF OAK RIDGE, TENNESSEE.

Mayor Pro Tem Chinn moved for approval of the resolution, and Councilmember Dodson seconded. Finance Director Janice McGinnis provided an overview of the resolution and answered questions from Council. She stated that the projects that are addressed in this resolution are the energy savings project with the Oak Ridge Schools, the financial and accounting software, radios for the Police and Fire Departments, and engineering and design work for the pre-school and senior center.

Councilmember Smith stated that these projects have been discussed at length both at work sessions and in the Budget and Finance Committee.

The resolution was approved unanimously by board vote with Councilmembers Callison, Dodson, Hope, Smith, Vogel, Mayor Gooch and Mayor Pro Tem Chinn voting “Aye.”

ADJOURNMENT

The meeting adjourned at 8:55 p.m.

CITY COUNCIL MEMORANDUM
17-34

DATE: September 28, 2017
TO: Honorable Mayor and Members of City Council
FROM: Mark S. Watson, City Manager
SUBJECT: SURPLUS ANIMAL CONTROL TRUCK – DONATION TO TOWN OF OLIVER SPRINGS, TENNESSEE

Introduction

An item for City Council's consideration is a resolution authorizing the transfer of a surplus 1995 Ford F-250 truck (VIN: 1FDHF25H6TEA18047) with an animal control box to the Town of Oliver Springs, Tennessee at no cost for their use.

Financial

The City of Oak Ridge will incur no cost in the disposal of this equipment, as the unit will be provided to the Town of Oliver Springs in "as-is" condition.

Background

The City recently purchased a new model Dodge truck and Animal Control box to replace the truck being donated. The Blue Book value of the donated truck is approximately \$649.00. With some repair, the donated truck could be used on a limited basis. Oliver Springs understands the vehicle's limitations and is prepared to make necessary repairs, due to immediate need.

Recommendation

Approval of the attached resolution is recommended.



Mark S. Watson

Attachment: Resolution

RESOLUTION

A RESOLUTION AUTHORIZING THE TRANSFER OF A SURPLUS ANIMAL CONTROL VEHICLE TO THE TOWN OF OLIVER SPRINGS, TENNESSEE, AT NO COST FOR THEIR USE.

WHEREAS, the City recently purchased a Dodge truck to replace a 1995 Ford F-250 truck for use by the Animal Control Division of the Police Department; and

WHEREAS, the City has declared the 1995 Ford F-250 truck as surplus to the City's needs; and

WHEREAS, the Town of Oliver Springs has requested the donation of said surplus vehicle; and

WHEREAS, Tennessee Code Annotated §12-3-1005 allows governmental entities to purchase, trade, or gift personal property to each other without public advertisement and competitive bidding; and

WHEREAS, the City Manager recommends the vehicle be donated to the Town of Oliver Springs for their use.

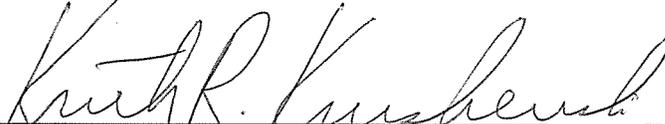
NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE:

That the recommendation of the City Manager is approved and the donation of one (1) 1995 Ford F-250 to the Town of Oliver Springs, Tennessee, as authorized by Tennessee Code Annotated §12-3-1005, is hereby approved.

BE IT FURTHER RESOLVED that the City Manager is hereby authorized to execute the appropriate legal instruments to accomplish the same.

This the 9th day of October 2017.

APPROVED AS TO FORM AND LEGALITY:



Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

CITY COUNCIL MEMORANDUM
17-33

DATE: October 2, 2017
TO: Honorable Mayor and Members of City Council
FROM: Mark S. Watson, City Manager
SUBJECT: SURPLUS PROPERTY – FIRE TRUCK

Introduction

An item for City Council's consideration is a resolution authorizing the transfer of a surplus 1992 fire truck (#353) to the Briceville Volunteer Fire Department, Briceville, Tennessee at no cost for their use.

Financial

The City has incurred no cost in the disposal of this equipment as the unit will be provided "as-is" to the Briceville Volunteer Fire Department located in Anderson County. The Briceville Volunteer Fire Department will use the vehicle to serve their community and provide mutual aid to other Anderson County fire departments, including the City of Oak Ridge.

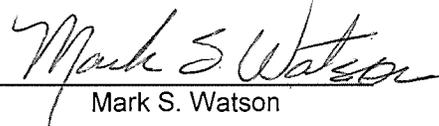
Background

The City will be receiving a new fire engine in October, which was purchased by funds from Anderson County and the Department of Energy. The new fire engine will replace a front-line engine, which will then become the backup reserve engine. The surplus 1992 Emergency-One Fire Truck was previously serving as a reserve unit and will no longer be needed upon arrival of the new fire engine. The E-One will be a significant improvement over the 1956 fire engine currently located in the Briceville Fire Department.

With the purchase of the new fire engine, it is a prudent decision to improve the fire service in Anderson County by passing along a newer fire engine to a volunteer fire department who currently serves a community in Anderson County. In the event the fire engine would ever be needed for an unanticipated reason, our agreement with the Briceville Volunteer Fire Department would be to provide backup to the City of Oak Ridge if called upon.

Recommendation

Approval of the attached resolution is recommended.


Mark S. Watson

Attachment: Resolution

RESOLUTION

A RESOLUTION AUTHORIZING THE TRANSFER OF A SURPLUS 1992 FIRE TRUCK (#353) TO BRICEVILLE VOLUNTEER FIRE DEPARTMENT, BRICEVILLE, TENNESSEE, AT NO COST FOR THEIR USE.

WHEREAS, the City's Fire Department has a 1992 Emergency-One Fire Truck (#353) which has previously been used as a backup vehicle for the department; and

WHEREAS, with the purchase of a new fire engine, the previous front line unit is now a backup vehicle for the department and the 1992 vehicle has been declared surplus; and

WHEREAS, Briceville Volunteer Fire Department, Briceville, Tennessee, has requested the City to consider transferring the fire truck to them and has offered for the City to be able to still use the vehicle if needed in the event of an emergency; and

WHEREAS, Tennessee Code Annotated §12-3-1005 allows governmental entities to purchase, trade, or gift personal property to each other without public advertisement and competitive bidding; and

WHEREAS, the City Manager recommends the vehicle be donated to Briceville Volunteer Fire Department for their use.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE:

That the recommendation of the City Manager is approved and the donation of the 1992 Emergency-One Fire Truck (#353) to Briceville Volunteer Fire Department, Briceville, Tennessee, as authorized by Tennessee Code Annotated §12-3-1005, is hereby approved.

BE IT FURTHER RESOLVED that the City Manager is hereby authorized to execute the appropriate legal instruments to accomplish the same.

This the 9th day of October 2017.

APPROVED AS TO FORM AND LEGALITY:



Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

PUBLIC WORKS DEPARTMENT MEMORANDUM
17-44

DATE: September 15, 2017
TO: Mark S. Watson, City Manager
THROUGH: Shira A. McWaters, P.E., Public Works Director *SAM*
FROM: Pat Fallon, Division Manager
SUBJECT: **PURCHASE OF LARGE CEILING FANS**

Introduction

An item for City Council consideration is a resolution for the purchase and installation of six (6) large ceiling fans at the Central Services Complex in accordance with Contract FY2018-056, from Delta T Corporation dba Big Ass Solutions, Lexington, Kentucky, in the estimated amount of \$63,738.

Funding

Funding is available from the encumbered funds from FY2017.

Analysis

The equipment shop and warehouse are two (2) large areas located at the Central Services Complex that are not air conditioned and do not lend themselves to add air conditioning due to large garage doors having to be opened. The temperature consistently remains above eighty-five (85) degrees during the summer and there is limited natural air circulation. Both areas currently use floor fans that are very loud and do not cool much area.

The proposed large ceiling fans are equipped with low RPM high volume air movers that will circulate air throughout the entire shop and warehouse. The proposal includes purchase and installation of six (6) fans; three (3) for each area. The fans are also helpful in winter months to pull heat down from the high ceilings and keep the temperature more regulated. These fans are sealed, permanently lubricated, recommended for warehouse type environments, and there is no routine maintenance required.

Recommendation

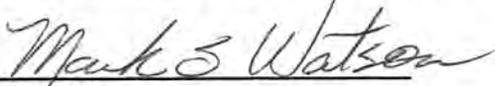
Sealed bids were solicited with only one (1) bid received. Staff recommends approval of the resolution as submitted.

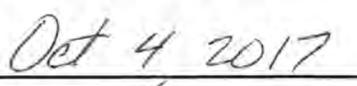


Pat Fallon

City Manager's Comments:

I have reviewed the above issue and recommend Council action as outlined in this document.


Mark S. Watson


Date

CITY OF OAK RIDGE, TENNESSEE
Abstract of Bids

RFQ 154454

OPENING DATE: September 12, 2017 2:00 P.M.

FOR --- Big Ass Fans			BIDDER: Big Ass Fan Company 2348 Innovation Drive Lexington, KY 40511		BIDDER:		BIDDER:		BIDDER:		
DESCRIPTION	Item	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL	
FURNISH ALL LABOR, MATERIALS, TOOLS, AND EQUIPMENT NECESSARY TO PERFORM ALL WORK AND SERVICES REQUIRED FOR SIX BIGASS FANS PER THE SPECIFICATIONS PROVIDED BY THE CITY OF OAK RIDGE PUBLIC WORKS DEPARTMENT				\$ 63,738.00							
TOTAL PRICE				\$ 63,738.00	\$ -			\$ -	\$ -		
TERMS				NET 30	NET 30						
DELIVERY				4 WEEKS	3 - 4 WEEKS						
F.O.B.				JOBSITE	JOBSITE						
VIA				VENDOR	VENDOR						
OTHER BIDDERS CONTACTED: <u>SEE BID PROCESS FORM</u>							BIDS OPENED AND RECORDED BY--- <i>Lyn Majeski</i> Lyn Majeski Accounting Division Manager				
REASON FOR AWARD ONLY BID RECEIVED <input checked="" type="checkbox"/> LOW PRICE <input type="checkbox"/> BETTER OR REQUIRED DESIGN <input type="checkbox"/> EARLY DELIVERY <input type="checkbox"/> LOWEST TOTAL COST <input type="checkbox"/>				RECOMMEND AWARD BE MADE TO: Big Ass Fan Company 2348 Innovation Drive Lexington, KY 40511			BIDS REVIEWED BY--- <i>Janice McGinnis</i> Janice McGinnis Finance Director				

RESOLUTION

A RESOLUTION AUTHORIZING THE PURCHASE AND INSTALLATION OF SIX (6) LARGE CEILING FANS FROM DELTA T CORPORATION DBA BIG ASS SOLUTIONS, LEXINGTON, KENTUCKY, FOR USE AT THE CENTRAL SERVICES COMPLEX IN THE ESTIMATED AMOUNT OF \$63,738.00.

WHEREAS, the Equipment Shop and Warehouse at the Central Services Complex are not air conditioned due to the large garage doors that are opened throughout the day; and

WHEREAS, these areas are currently cooled with floor fans that are very loud and do not provide much cooling; and

WHEREAS, the City issued an invitation to bid for the purchase and installation of large ceiling fans for the areas to provide better cooling in the summer months and to also help pull heat down from the high ceilings in the winter months; and

WHEREAS, bids were received and publicly opened on September 12, 2017, with Delta T Corporation dba Big Ass Solutions, Lexington, Kentucky, submitting the sole bid, which bid the City Manager recommends be accepted.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE:

That the recommendation of the City Manager is approved and award is hereby made to Delta T Corporation dba Big Ass Solutions, 2348 Innovation Drive, Lexington, Kentucky 40511, for the purchase and installation of six (6) large ceiling fans for the Central Services Complex; said award in strict accordance with Requisition No. 154454, the required specifications and associated contract (FY2018-056), and the bid as publicly opened on September 12, 2017, and in the estimated amount of \$63,738.00.

BE IT FURTHER RESOLVED that the City Manager is hereby authorized to execute the appropriate legal instruments to accomplish the same.

This the 9th day of October 2017.

APPROVED AS TO FORM AND LEGALITY:



Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

**FIRST READING
OF
ORDINANCES**

**COMMUNITY DEVELOPMENT MEMORANDUM
PLANNING DIVISION
17-45**

DATE: 9/26/2017

TO: Mark Watson, City Manager

FROM: Kelly Duggan, Senior Planner 

THROUGH: Wayne Blasius, Community Development Director 

SUBJECT: Zoning Ordinance Text Amendment – Driveway location and spacing

Introduction

Currently, the Zoning Ordinance dictates several spacing requirements for the location of driveways, including minimum distances between driveways on separate lots and from property lines. Driveways must be a minimum of 10' at the radius return from all side and rear lot lines. This typically results in a total of 15', since the return usually adds an additional 5'. With regard to distances between driveways on separate lots, it requires 20' separation between the radius return from one driveway to the next. There is also language that allows reductions for residentially-zoned lots in some cases.

Funding

No funding is necessary to approve this request.

Analysis

In reviewing requests for new driveway installations in residential areas, Community Development staff has found that the existing regulations are inconsistent with the existing development pattern of our neighborhoods, particularly in the Manhattan District Overlay. This district encompasses housing stock constructed between 1942 and 1945. Narrow lot frontages combine with relatively wide houses, making it challenging to comply with the 10' requirement. Similarly, the typical development pattern in the city's original neighborhoods often precludes properties from complying with the requirement that driveways on separate lots be at least 20' apart.

Amending the Zoning Ordinance to reduce the distance from property line requirement and remove the 20' spacing requirement for residential uses would accomplish two things. First, it would create regulations that are more consistent with the existing development pattern of the older parts of the city. It is best practice for regulations to be responsive to the surrounding built environment, as this establishes a sense of continuity within communities. Second, it would facilitate getting more cars off the streets and onto approved parking spaces, which would enhance the character of the city's oldest neighborhoods.

The staff also recognizes that while a 5' distance from property line requirement will be sufficient in the majority of the city's newer neighborhoods, greater reductions may be necessary in the Manhattan District Overlay. The staff has consulted with the Department of Public Works to establish criteria wherein greater reductions may be authorized by the City Manager's designee for properties, specifically in that district.

Recommendation:

Staff recommends amending the Zoning Ordinance to reduce the distance from property line requirement from 10' to 5' on all properties developed with single- and two-family residential uses, removing the 20' spacing requirement from all residential zoning districts, and to establish criteria wherein greater reductions may be authorized by the City Manager's designee for properties with the Manhattan District Overlay. The amendment would establish regulations that are responsive to the existing development pattern of the city's historic neighborhoods, creating a more harmonious environment. It would also facilitate getting more cars off the streets and onto approved parking spaces, which would make the streets safer to travel and enhance the character of the neighborhood. The proposed amendment is to Article XI Section 11.01(d) 3 & 11.01(d) 4 of the Zoning Ordinance and is shown below.

The rezoning request was reviewed and discussed by the Oak Ridge Planning Commission and recommended for approval to City Council by a vote of 9 – 0 (1 absent) during the regularly scheduled meeting on September 21, 2017.

New Language is highlighted, old language is stricken:

Section 11.01(d) *Design Criteria*

3. Minimum Distance Between Driveways on Separate Lots

On secondary and minor roads and in all ~~zoning districts except one-family residential and R-2, two-, three-, four-family Residential~~ **non-residential zoning districts**, no two driveways serving separate lots shall be less than twenty (20) feet apart. The distance between driveways shall be measured from the nearest point of the radius return of the two driveways.

4. Minimum Distance from Property Line

No driveway, other than a shared driveway as authorized under Subsection 8., Shared Access Easements, below, shall be allowed within ~~ten (10)~~ **five (5)** feet of the intersection of a straight line projection of any side or rear lot line. ~~and the nearest point of radius return of the driveway, except for single or double parking spaces for use in R-1 and R-2 residential zoning districts.~~

The minimum distance from a property line may be reduced further for residential properties in the Manhattan District Overlay provided that, in the opinion of the City

Manager or the City Manager's designee, using commonly accepted and applied traffic engineering principles, the following conditions exist:

- a. Where the use of marginal frontage roads or shared access easements are not feasible or possible;
- b. Where exceptional topographic constraints or unusual site conditions at the driveway location (such as in-place utility or drainage features) would make application of the standard exceptionally and/or practically difficult or unduly harsh;
- c. Where application of this article would conflict with other sections of this article;
- d. Where such reduction would not constitute a threat or danger to the safe and efficient flow of traffic.

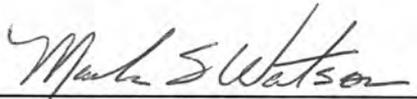
Attachments:

Driveway Design Criteria Drawing

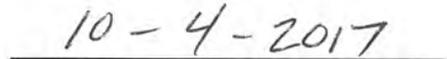
Ordinance

City Manager's Comments:

I have reviewed the above issue and recommend Council action as outlined in this document.



Mark S. Watson



Date

TITLE

AN ORDINANCE TO AMEND ORDINANCE NO. 2, TITLED "THE ZONING ORDINANCE OF THE CITY OF OAK RIDGE, TENNESSEE, BY DELETING SUBPARTS (D)(3) AND (D)(4) OF SECTION 11.01, TITLED "VEHICLE ACCESS CONTROL," AND SUBSTITUTING THEREFOR NEW SUBPARTS (D)(3) AND (D)(4) RELATIVE TO DRIVEWAY LOCATIONS AND SPACING.

WHEREAS, the City of Oak Ridge is continually reviewing the Zoning Ordinance to update provisions and make it more understandable to the general public; and

WHEREAS, the following amendments will update the Zoning Ordinance to reduce the driveway distance-from-property-line requirement and remove the 20 foot spacing requirement for residential uses, which will create regulations that are more consistent with the existing development pattern in the older parts of the City and will facilitate getting more cars off the streets and onto approved driveways/parking spaces thereby enhancing the character of the older communities; and

WHEREAS, the following changes have been submitted for approval or disapproval to the Oak Ridge Municipal Planning Commission and the Commission has approved the same; and

WHEREAS, a public hearing thereon has been held as required by law.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE:

Section 1. Ordinance No. 2, titled "The Zoning Ordinance of the City of Oak Ridge, Tennessee," Section 11.01(d), titled "Design Criteria," is hereby amended by deleting Subpart 3, titled "Minimum Distance Between Driveways on Separate Lots," and replacing it with a new Subpart 3, titled "Minimum Distance Between Driveways on Separate Lots," which new subpart shall read as follows:

Section 11.01. Vehicle Access Control.

(d) Design Criteria.

3. Minimum Distance Between Driveways on Separate Lots

No two driveways serving separate lots on an arterial road shall be less than two hundred and fifty (250) feet apart.

On secondary and minor roads and in all non-residential zoning districts, no two driveways serving separate lots shall be less than twenty (20) feet apart. The distance between driveways shall be measured from the nearest point of the radius return of the two driveways.

The minimum separation distance may be reduced provided that, in the opinion of the City Manager or the City Manager's designee, using commonly accepted and applied traffic engineering principles, the following conditions exist:

- a. Where the use of marginal frontage roads or shared access easements are not feasible or possible;
- b. Where exceptional topographic constraints or unusual site conditions at the driveway location (such as in-place

utility or drainage features) would make application of the standard exceptionally and/or practically difficult or unduly harsh;

- c. Where application of this article would conflict with other sections of this article; or
- d. Where such reduction would not constitute a threat or danger to the safe and efficient flow of traffic.

Section 2. Ordinance No. 2, titled "The Zoning Ordinance of the City of Oak Ridge, Tennessee," Section 11.01(d), titled "Design Criteria," is hereby amended by deleting Subpart 4, titled "Minimum Distance from Property Line," and replacing it with a new Subpart 4, titled "Minimum Distance from Property Line," which new subpart shall read as follows:

Section 11.01. Vehicle Access Control.

(d) Design Criteria.

4. Minimum Distance from Property Line

No driveway, other than a shared driveway as authorized under Subsection 8., Shared Access Easements, below, shall be allowed within five (5) feet of the intersection of a straight line projection of any side or rear lot line.

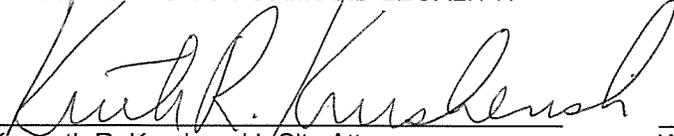
The minimum distance from a property line may be reduced further for residential properties in the Manhattan District Overlay provided that, in the opinion of the City Manager or the City Manager's designee, using commonly accepted and applied traffic engineering principles, the following conditions exist:

- a. Where the use of marginal frontage roads or shared access easements are not feasible or possible;
- b. Where exceptional topographic constraints or unusual site conditions at the driveway location (such as in-place utility or drainage features) would make application of the standard exceptionally and/or practically difficult or unduly harsh;
- c. Where application of this article would conflict with other sections of this article; or
- d. Where such reduction would not constitute a threat or danger to the safe and efficient flow of traffic.

Section 3. Ordinance No. 2, titled "The Zoning Ordinance of the City of Oak Ridge, Tennessee," Section 11.01(d), titled "Design Criteria," is hereby amended by replacing the existing Design Criteria Minimum Distance From Intersection drawing with the attached new drawing.

Section 4. This ordinance shall become effective ten (10) days after adoption on second reading, the welfare of the City of Oak Ridge requiring it.

APPROVED AS TO FORM AND LEGALITY:



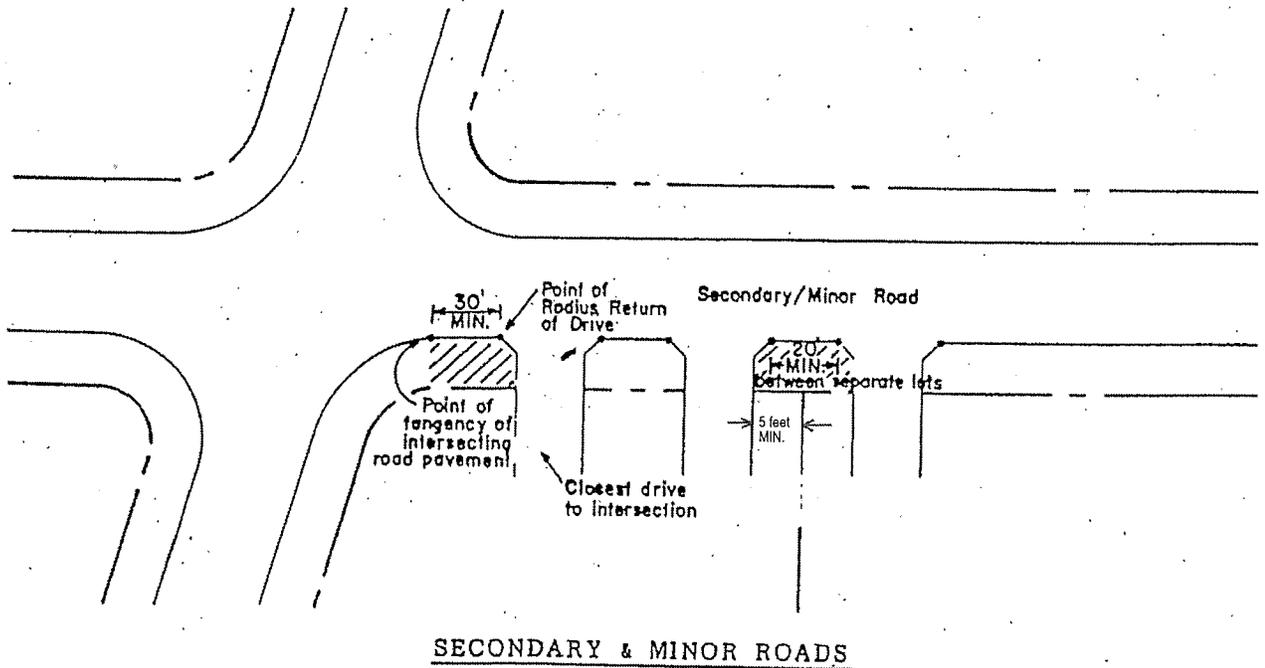
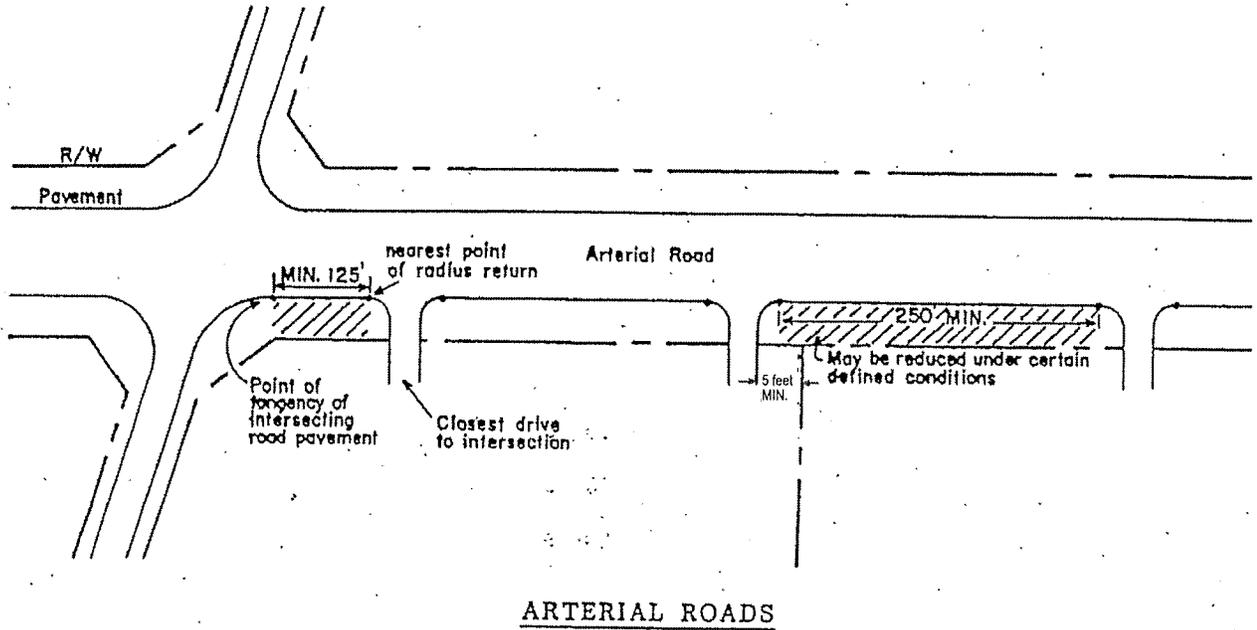
Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

Public Hearing: _____
Publication Date: _____
First Reading: _____
Publication Date: _____
Second Reading: _____
Publication Date: _____
Effective Date: _____

DESIGN CRITERIA
 MINIMUM DISTANCE FROM INTERSECTION
 11.01(d) (2)
 MINIMUM DISTANCE BETWEEN DRIVEWAYS ON SEPARATE LOTS
 11.01(d) (3)
 MINIMUM DISTANCE FROM PROPERTY LINE
 11.01(d) (4)



**COMMUNITY DEVELOPMENT MEMORANDUM
PLANNING DIVISION
17-49**

DATE: September 26, 2017
TO: Mark Watson, City Manager
FROM: Jordan Clark, Senior Planner JC
THROUGH: Wayne Blasius, Community Development Director WB
SUBJECT: REZONING OF PARCEL 047.00, GROUP D, TAX MAP 094J – 500 OAK RIDGE
TURNPIKE FROM B-3 TO B-2

Introduction

An item for City Council's consideration is a request to approve rezoning of a 0.45 acre parcel from B-3 Roadside Business District to B-2 General Business District. The property is currently owned by B&H Partnership. The applicant, Garry Phillips, has an option to purchase the property. In his application, the applicant states that he intends to establish a dental office on the property.

Funding

No funding is necessary to approve this request.

Analysis

The property is a 0.45 acre lot. The most recent land use was a mattress store which ceased operations several years ago. Currently, the property is vacant but does contain an existing building and parking areas.

The property is a corner lot with direct access onto Oak Ridge Turnpike through an existing curb cut. The lot also borders on California Avenue and an existing access point exists onto that road as well.

The existing zoning is B-3 Roadside Business District. The proposed rezoning is for the B-2 General Business District. Both zoning districts are for commercial properties. The B-3 zone district allows intensive uses but is limited in the number of those uses. As stated in the district's description, the B-3 is for businesses which "generally require a considerable ground area" and are not of a "neighborhood or community service type." Consequently, the property's size and zoning designation meet neither of those categories and is inaccurately zoned.

The proposed rezoning is for the B-2 General Business District. A B-2 zoning for the property is consistent with the area. B-2 zoning is present on the opposite side of Oak Ridge Turnpike and prevalent for other commercial properties on Oak Ridge Turnpike.

Recommendation

Staff recommends approval of this rezoning request. The B-3 zoning district is an intensive commercial zoning designation but limited in the number of uses it allows. Consequently, the property is constrained in the types of redevelopment opportunities available to it despite being similar in nature to nearby properties on the Oak Ridge Turnpike which have the B-2 zoning designation. Given the property's location along a commercial corridor and existing intensive commercial designation, staff recommends rezoning of the property to the more appropriate B-2 zoning district.

The rezoning request was reviewed and discussed by the Oak Ridge Planning Commission and recommended for approval to City Council by a vote of 9 – 0 (1 absent) during the regularly scheduled meeting on September 21, 2017.

Attachments:

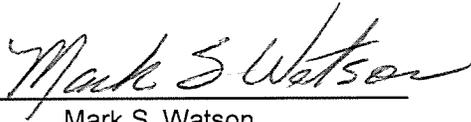
500 Oak Ridge Turnpike Current Zoning Map

500 Oak Ridge Turnpike Aerial Map

Ordinance

City Manager's Comments:

I have reviewed the above issue and recommend Council action as outlined in this document.

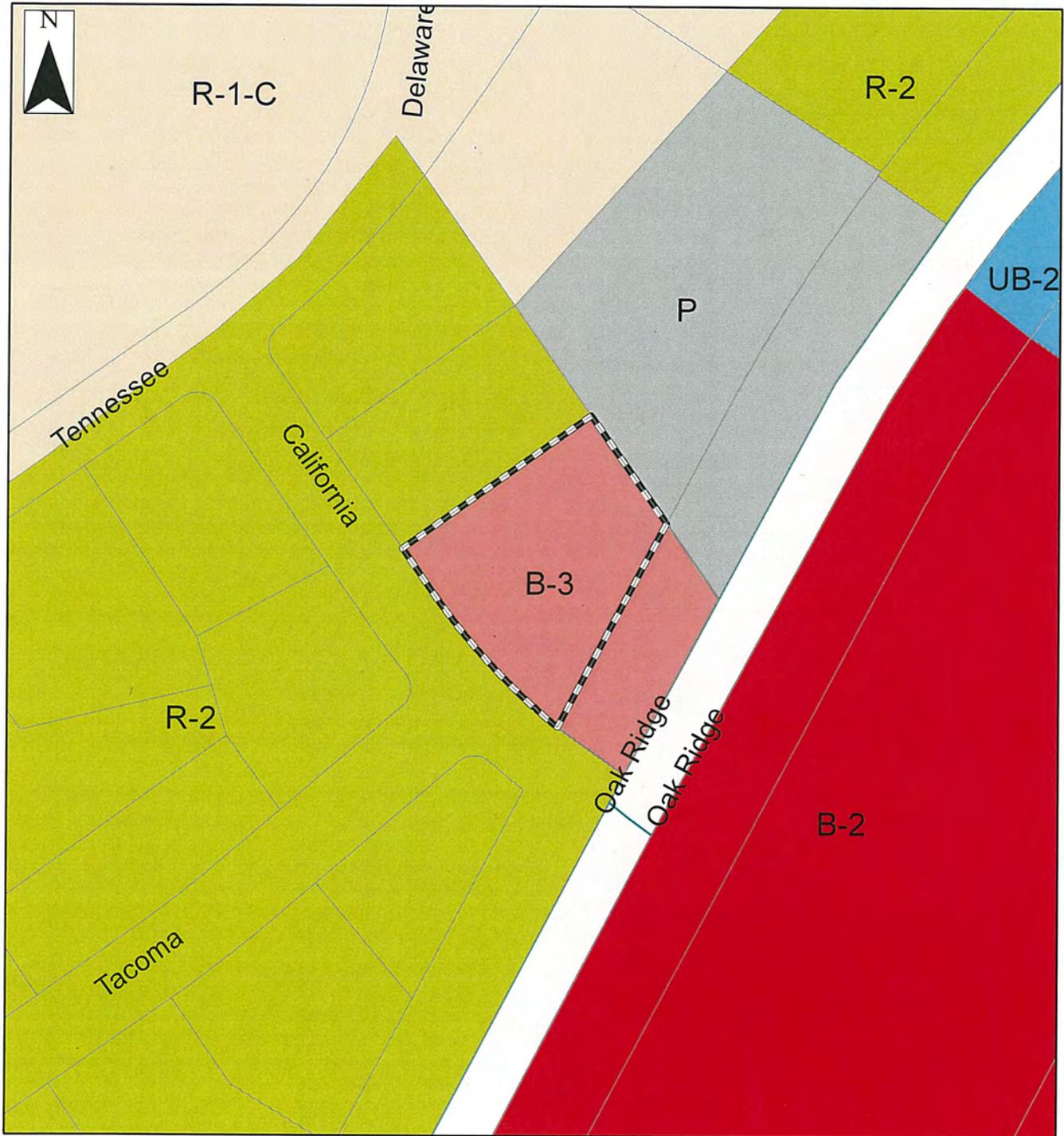


Mark S. Watson



Date

500 Oak Ridge Turnpike Rezoning - Current Zoning



0 62.5 125 250 Feet

This map was prepared by the City of Oak Ridge Community Development Department. The map is for illustrative purposes only and is not an engineering map or survey.

Date: 9/14/2017

Author: Jordan Clark

Legend

-  500 Oak Ridge Turnpike
-  B-3 Roadside Business District
-  B-2 General Business District
-  Parking District
-  R-1-C Single Family Residential
-  R-2 Low Density Residential
-  RG-1 Residential, Open Space and Reserved District
-  UB-2 Unified General Business District

500 Oak Ridge Turnpike Rezoning - Aerial



0 62.5 125 250 Feet

This map was prepared by the City of Oak Ridge Community Development Department. The map is for illustrative purposes only and is not an engineering map or survey.

Legend

 500 Oak Ridge Turnpike

Date: 9/14/2017

Author: Jordan Clark

TITLE

AN ORDINANCE TO AMEND ORDINANCE NO. 2, TITLED "THE ZONING ORDINANCE OF THE CITY OF OAK RIDGE, TENNESSEE," BY AMENDING THE ZONING MAP WHICH IS MADE A PART OF THE ORDINANCE BY CHANGING THE ZONING DISTRICT OF PARCEL 047.00, ANDERSON COUNTY TAX MAP 094J, GROUP D, (APPROXIMATELY 0.45 ACRES) FROM B-3, ROADSIDE BUSINESS DISTRICT, TO B-2, GENERAL BUSINESS DISTRICT, SAID PARCEL BEING LOCATED AT 500 OAK RIDGE TURNPIKE.

WHEREAS, the following change has been submitted for approval or disapproval to the Oak Ridge Municipal Planning Commission and the Commission has approved the same; and

WHEREAS, a public hearing thereon has been held as required by law.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF OAK RIDGE TENNESSEE:

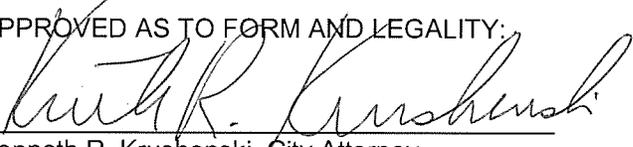
Section 1. The district boundaries of the zoning map attached to and made a part of Ordinance No. 2, as amended, are revised in the following particulars:

<u>Property Description</u>	<u>Location</u>	<u>Present Zoning District</u>	<u>New Zoning District</u>
Parcel 047.00 Map 094J, Group D (± 0.45 Acres)	500 Oak Ridge Turnpike	B-3, Roadside Business District	B-2, General Business District

Section 2. The change shall be imposed upon said map and shall be as much a part of Ordinance No. 2 as if fully described therein.

Section 3. This ordinance shall become effective ten (10) days after adoption on second reading, the welfare of the City of Oak Ridge requiring it.

APPROVED AS TO FORM AND LEGALITY:



Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

Public Hearing: _____
Publication Date: _____
First Reading: _____
Publication Date: _____
Second Reading: _____
Publication Date: _____
Effective Date: _____

PUBLIC WORKS DEPARTMENT MEMORANDUM

17-43

DATE: October 9, 2017
TO: Mark S. Watson, City Manager
THROUGH: Shira A. McWaters, P.E., Public Works Director *SAM*
FROM: Roger Flynn, P.E., City Engineer
SUBJECT: **ADJUSTMENT OF SPEED LIMIT ON SR-95 BETWEEN THE SR-95/SR-58 INTERCHANGE AND THE OAK RIDGE CITY LIMITS**

Introduction

An item for City Council consideration is the recommendation to adjust the speed limit on SR-95 between the SR-95/SR-58 interchange and the Oak Ridge city limits, located at the south end of the Melton Lake Dam Bridge.

Funding

There is no cost to this action.

Analysis

Tennessee Department of Transportation (TDOT) contacted the Engineering Division regarding lowering the speed limit on TN SR-95 from 55mph to 50mph between the SR-95/SR-58 interchange and the Oak Ridge city limits. This segment of SR-95 is located within City limits. The City of Oak Ridge has jurisdiction regarding the posted regulatory speed limits for all streets within the city limits.

TDOT has advised that it was forwarding a request from a citizen. Normally Public Works would not recommend such a change based solely on a request without significant justification or supporting documentation; however, Public Works does investigate all complaints and/or requests.

Following is a brief analysis of the results of that investigation:

1. TDOT provided results from a speed study conducted on this segment of roadway which showed the 50 percentile speed was 43mph and the 85 percentile speed was 49mph. This indicates the majority of traffic is already traveling below the proposed speed limit. In addition, because of the number of curves and driveways, there are seven (7) different locations where advisory signs recommend reduction in speed varying from 35mph to 25mph.
2. Public Works noted discrepancies between the City Ordinance and the posted speed limits, which makes any posted speed limit unenforceable.
 - a. City Ordinance 15-509 (5) is identified as White Wing Road from SR-95, then identified as Oak Ridge Turnpike to White Wing Bridge, has a maximum speed limit of 55mph.
 - b. The speed limit presently posted in the majority of this section is 50mph, except for the south portion, approximately 950' south of Wipp Road, extending to the bridge at Melton Lake, is posted at 45mph.

Based on the analysis above, Public Works recommends leaving the speed limit postings as they currently exist and instead change the Ordinance to match the signage. The steps to implement this recommendation include:

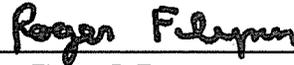
1. Deleting item five in section 15-509 of the City Ordinance. The section states that SR-95, identified as White Wing Road from SR-95, identified at Oak Ridge Turnpike to White Wing Bridge, has a maximum speed limit of 55mph.
2. Add a new item three to section 15-508 of the City Ordinance entitled, "*Maximum limits on specific streets - fifty (50) miles per hour*" to include White Wing Road from Oak Ridge Turnpike to a point approximately 950' south of Wipp Road.

3. Add a new item nine to section 15-507 to be entitled, "*Maximum limits of specific streets - forty five (45) miles per hour*" to include White Wing Road from approximately 950' south of Wipp Road to White Wing Bridge.

The Traffic Safety Advisory Board reviewed the proposed changes at the August 15, 2017 meeting and recommend approval. The Oak Ridge Police Department also endorses this recommendation. The net result to these changes will not affect the traveling public.

Recommendation

Staff recommends approval of this proposal to change portions of the City Ordinance.



Roger Flynn, P.E.

City Manager's Comments:

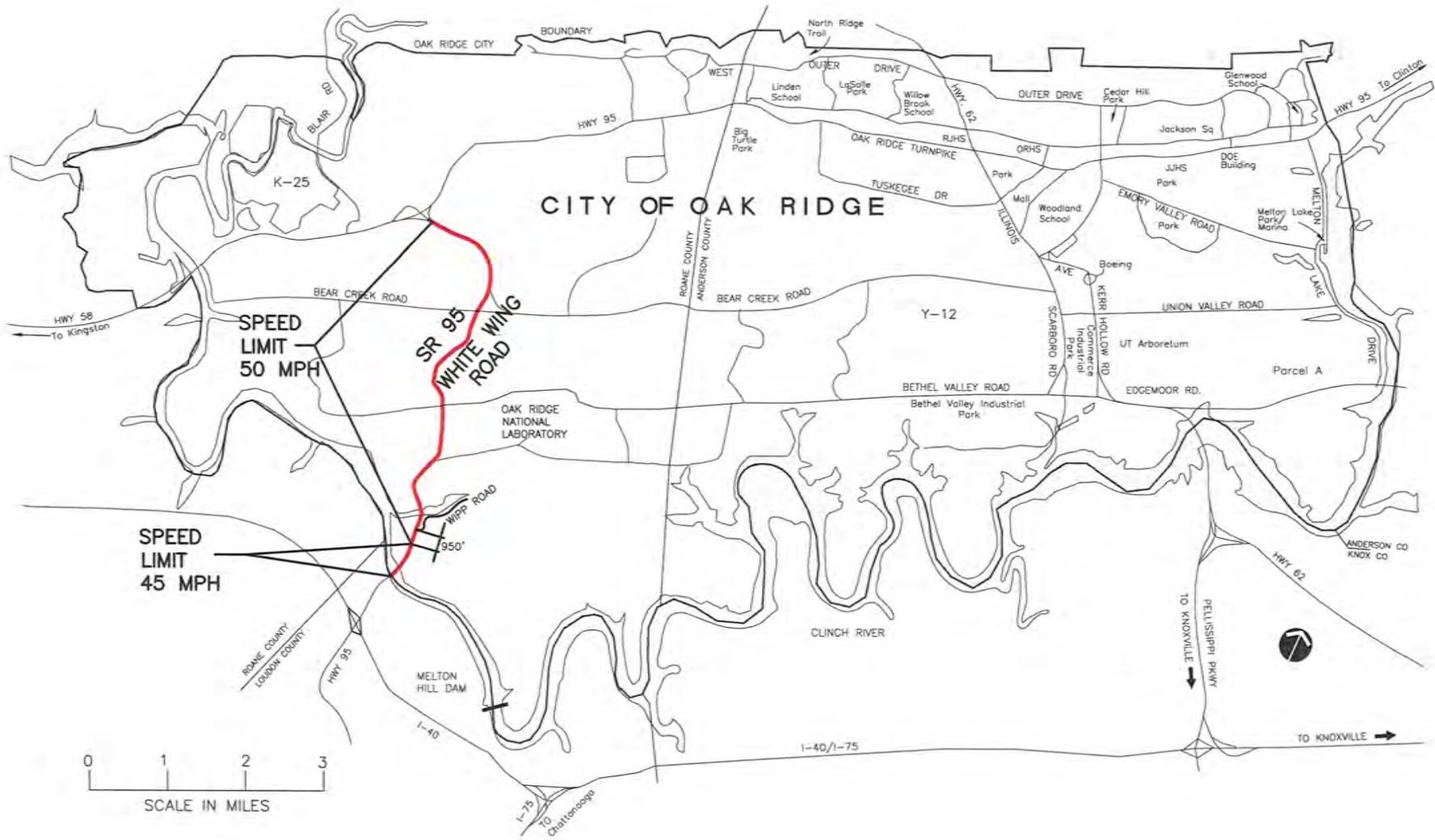
I have reviewed the above issue and recommend Council action as outlined in this document.



Mark S. Watson

10-4-17

Date



PROPOSED SPEED LIMIT CHANGE TO CITY ORDINANCE 15-509 FOR SR 95					
PUBLIC WORKS DEPARTMENT OAK RIDGE, TENNESSEE					
DR. BY: CCB	CHK' BY: RF	DATE: 9/21/2017	SCALE: NA	DR. NO.: 1	DIRECTOR: SHIRA MCWATERS

Flynn, Roger

From: Nathan Vatter <Nathan.Vatter@tn.gov>
Sent: Tuesday, July 18, 2017 10:05 AM
To: Flynn, Roger
Cc: Ray.Peters@truproject.com; Cameron Parker; Bryan Bartnik
Subject: State Route 95 (Speed Limits)
Attachments: 2378_001.pdf; RE: TWPC--Wipp Road off of Route 95

Roger,

We recently took a request to consider lowering of the 55 mph posted speed limit on SR-95 near Whipp Road in Roane County.

Following a review of our records and files we found that the segment appears to be located within the incorporated boundary of Oak Ridge. This would result in Oak Ridge having jurisdiction for the posted regulatory speed limits. We also found a past study for the route for consideration of the posted speed. Please find the attached information for your consideration of the citizen request to lower the posted speed.

If you have any questions please let me know.

County: ROANE Route: SR095 Spcl. Use: D-NONE City/Seq: 1

From: To: [Find Now](#)

Route Feature: **Road Segment** Traffic Roadway Description Geometrics Road History Road System Maintenance Feature Maintenance

Road Names Control Items HPMS Special Systems US Routes Other [Road Segment - View](#)

BLM	ELM	Road Name	Functional Class	Administrative System	Government Control	Urban Area	Incorporated Area
000	5.790	WHIPP RD.	U OTH PRIN ART	13-NHS URBAN, STA.	STATE HWAY AGE.	155 - KNOXVIL	221 - OAK RIDGE
5.790	5.810	WHIPP RD.	U OTH PRIN ART	13-NHS URBAN, STA.	STATE HWAY AGE.	155 - KNOXVIL	221 - OAK RIDGE
5.810	10.220	OAK RIDGE TU	U OTH PRIN ART	13-NHS URBAN, STA.	STATE HWAY AGE.	155 - KNOXVIL	221 - OAK RIDGE



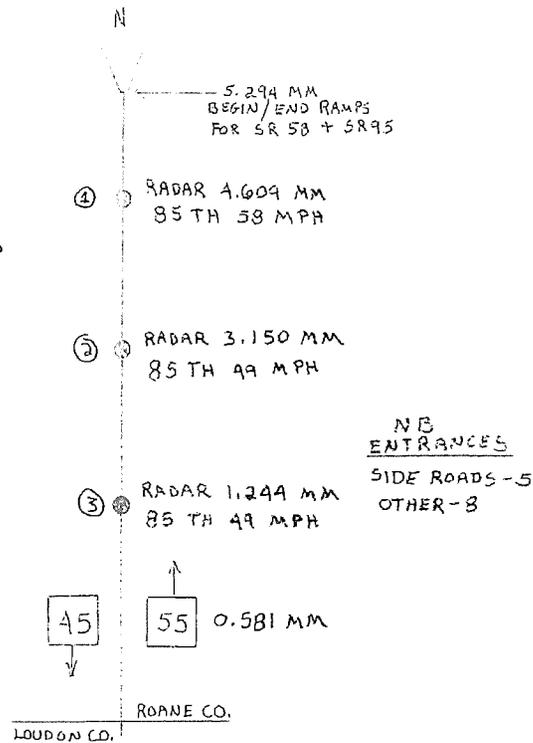
Nathan Vatter, P.E. | Region 1 Traffic Engineer
Region 1 Traffic Office
Transportation Management Center, 2ND Floor
7238 Region Lane
Knoxville, TN 37914
p. 865-594-2456
Nathan.Vatter@tn.gov
tn.gov/tdot

ROANE CO
 SR 95
 MM 0.581 MM MM 5.294
SPEED STUDY SR 58
 9/27/07

11 LANES
 8 SHOULDERS

* NOTE *
 COMBINED RADAR TOTALS
 85 TH 32 MPH

SB
ENTRANCES
 SIDE ROADS - 2
 OTHER - 4



NE
ENTRANCES
 SIDE ROADS - 5
 OTHER - 8

* Make sure whether
 in City of Oak Ridge
 * Recommend 50mph
 reduction.

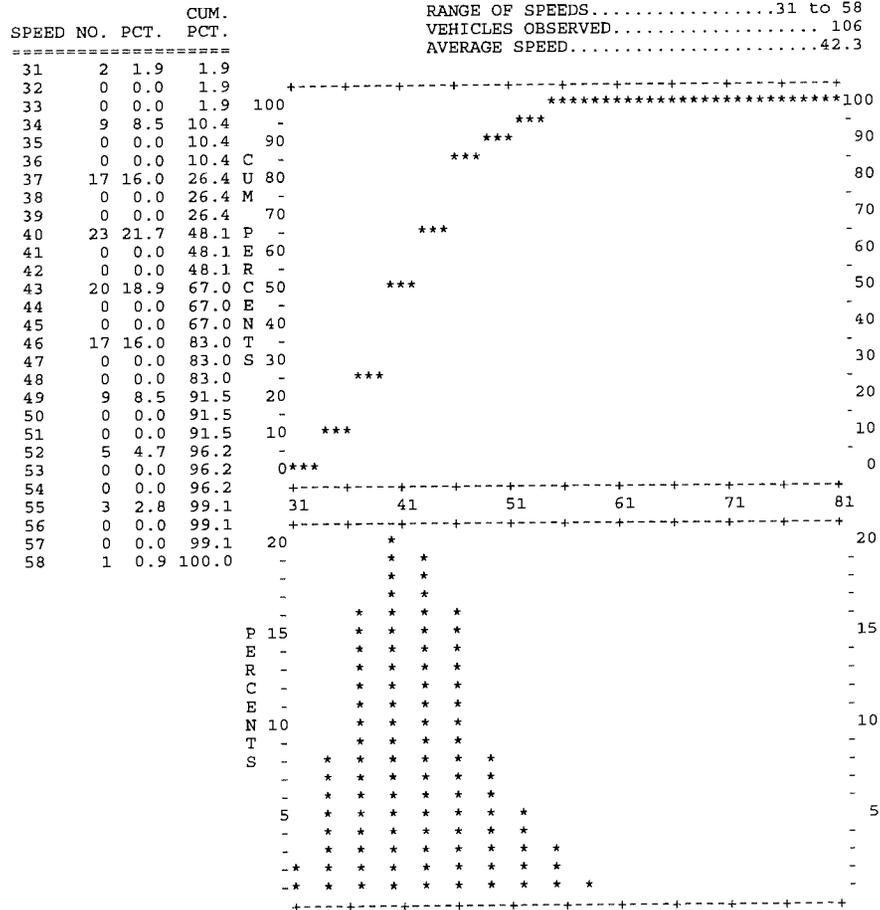
Send information
 to the City
 2/10/08



SR 95
 S

Bather Belrose Boje, Inc. SPEEDPLOT Program
 STREET..... 0 Blk. SR 95 1.244 MM
 LIMITS..... to

DIRECTION(S).....NORTH/SOUTH 50TH PERCENTILE SPEED.....43
 DATE.....9/27/07 85TH PERCENTILE SPEED.....49
 TIME.....11:28 TO 12:07 10 MPH PACE SPEED.....37 through 46
 POSTED SPEED LIMIT....55 PERCENT IN PACE SPEED..... 72.6
 PERCENT OVER PACE SPEED.....17.0
 PERCENT UNDER PACE SPEED.....10.4
 RANGE OF SPEEDS.....31 to 58
 VEHICLES OBSERVED..... 106
 AVERAGE SPEED.....42.3



P 15
 E -
 R -
 C -
 E -
 N 10
 T -
 S -

County ROANE Route SR095 Special Case 0 City Seq 1

Milepoint 1.236 Direction N Signing + Date Collected 08/30/2006



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING DIVISION
RADAR SPEED SURVEY

LOCATION SR 95 1.24A JONES ISLAND RD NO.
 REGION COUNTY ROANE CITY
 POSTED SPEED LIMIT 55 HOUR 1128-1267 DATE 92707
 DIRECTION OF FLOW N/S SURVEY MADE BY RH CHECKED BY
 RADAR SPEED SURVEY NO.

Speed Range	Median		Total
0 - 2	1		
3 - 5	4		
6 - 8	7		
9 - 11	10		1 2 3
12 - 14	13		4 5 6
15 - 17	16		7 8 9
18 - 20	19		10 11 12
21 - 23	22		13 14 15
24 - 26	25		16 17 18
27 - 29	28		19 20 21
30 - 32	31		22 23 24
33 - 35	34		25 26 27
36 - 38	37		28 29 30
39 - 41	40		31 32 33
42 - 44	43		34 35 36
45 - 47	46		37 38 39
48 - 50	49		40 41 42
51 - 53	52		43 44 45
54 - 56	55		46 47 48
57 - 59	58		49 50 51
60 - 62	61		1 2 3
63 - 65	64		4 5 6
66 - 68	67		7 8 9
69 - 71	70		10 11 12
72 - 74	73		13 14 15
75 - 77	76		16 17 18
78 - 80	79		19 20 21
81 - 83	82		22 23 24
84 - 86	85		25 26 27
87 - 89	88		28 29 30
			31 32 33
			34 35 36
			37 38 39
			40 41 42
Total Number of Vehicles.....			106

Flynn, Roger

From: Nathan Vatter <Nathan.Vatter@tn.gov>
Sent: Tuesday, July 18, 2017 10:05 AM
To: Flynn, Roger
Cc: Ray.Peters@truproject.com; Cameron Parker; Bryan Bartnik
Subject: State Route 95 (Speed Limits)
Attachments: 2378_001.pdf; RE: TWPC--Whipp Road off of Route 95

Roger,

We recently took a request to consider lowering of the 55 mph posted speed limit on SR-95 near Whipp Road in Roane County.

Following a review of our records and files we found that the segment appears to be located within the incorporated boundary of Oak Ridge. This would result in Oak Ridge having jurisdiction for the posted regulatory speed limits. We also found a past study for the route for consideration of the posted speed. Please find the attached information for your consideration of the citizen request to lower the posted speed.

If you have any questions please let me know.

County ROANE Route SR095 Spd C56 D-NONE City Sec 1

From To **Find Now**

Route Feature	Road Segment	Traffic	Roadway Description	Geometrics	Road History	Road System	Maintenance Feature	Maintenance
Road Names	Control Items	HPMS	Special Systems	US Routes	Other	Road Segment - View		
BLM	ELM	Road Name	Functional Class	Administrative System	Government Control	Urban Area	Incorporated Area	
000	5 700	WHIPP RD	U OTH PRIN ART	13-NHS URBAN_STA	STATE HWAY AGE	155 - KNOXVIL	221 - OAK RIDGE	
5 790	5 810	WHIPP RD	U OTH PRIN ART	13-NHS URBAN_STA	STATE HWAY AGE	155 - KNOXVIL	221 - OAK RIDGE	
5 810	10 220	OAK RIDGE TU	U OTH PRIN ART	13-NHS URBAN_STA	STATE HWAY AGE	155 - KNOXVIL	221 - OAK RIDGE	



Nathan Vatter, P.E. | Region 1 Traffic Engineer
Region 1 Traffic Office
Transportation Management Center, 2ND Floor
7238 Region Lane
Knoxville, TN 37914
p 865-594-2456
Nathan.Vatter@tn.gov
tn.gov/tdot

* NOTE *
COMBINED RADAR TOTALS
85 TH 52 MPH

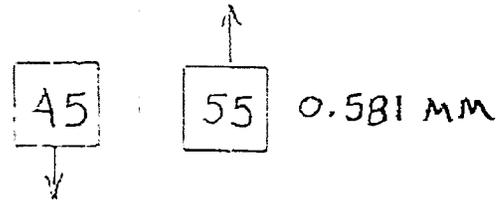
SB
ENTRANCES
SIDE ROADS - 2
OTHER - 4

① RADAR 4.609 MM
85 TH 58 MPH

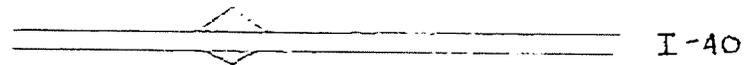
② RADAR 3.150 MM
85 TH 49 MPH

③ RADAR 1.244 MM
85 TH 49 MPH

NE
ENTRANCES
SIDE ROADS - 5
OTHER - 8



ROANE CO.
LOUDON CO.



SR 95
S

* Make sure whether
in City of Oak Ridge

* Recommend 50mph
reduction.

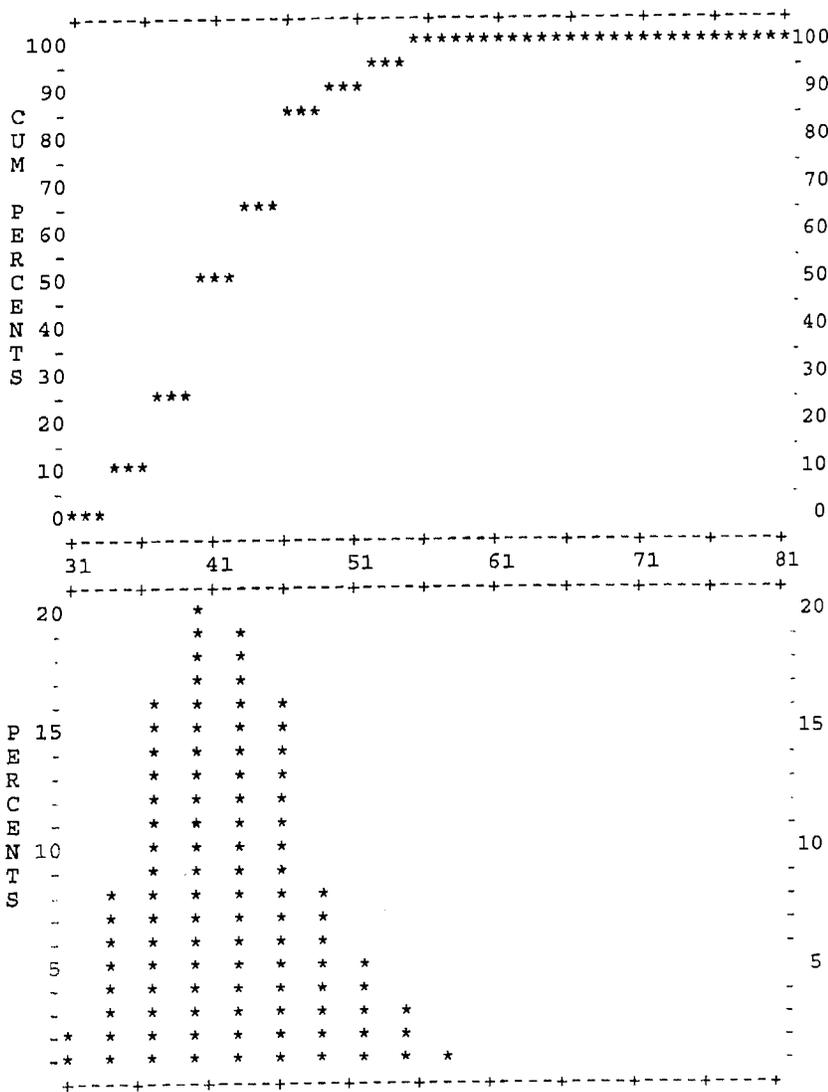
① Sent information
to the city
2/19/07

Bather Belrose Boje, Inc. SPEEDPLOT Program

STREET..... 0 Blk. SR 95 1.244 MM
 LIMITS..... to

DIRECTION(S).....NORTH/SOUTH 50TH PERCENTILE SPEED.....43
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 PERCENT UNDER PACE SPEED.....10.4
 RANGE OF SPEEDS.....31 to 58
 VEHICLES OBSERVED..... 106
 AVERAGE SPEED.....42.3

SPEED NO.	PCT.	CUM. PCT.
31	2	1.9
32	0	0.0
33	0	0.0
34	9	8.5
35	0	0.0
36	0	0.0
37	17	16.0
38	0	0.0
39	0	0.0
40	23	21.7
41	0	0.0
42	0	0.0
43	20	18.9
44	0	0.0
45	0	0.0
46	17	16.0
47	0	0.0
48	0	0.0
49	9	8.5
50	0	0.0
51	0	0.0
52	5	4.7
53	0	0.0
54	0	0.0
55	3	2.8
56	0	0.0
57	0	0.0
58	1	0.9



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CITY OF OAK RIDGE



POST OFFICE BOX 1 • OAK RIDGE, TENNESSEE 37831-0001

August 4, 2017

Mr. William Polfus, Chairman
Traffic Safety Advisory Board
110 Victoria Road
Oak Ridge, TN 37830

Subject: SR-95 Speed Limit

Traffic Safety Advisory Board:

Tennessee Department of Transportation (TDOT) officials recently contacted me regarding lowering the speed limit on TN SR-95 between the SR-95/SR-58 interchange and the Melton Lake Dam Bridge. This stretch of roadway is a State route, not a City street. The source of the request(s) and/or complaint(s) that precipitated TDOT to conduct a speed study and then contact the City are not known.

The City was contacted by TDOT concerning the speed limit since this segment of SR-95 is located within City limits. The City of Oak Ridge has jurisdiction regarding the posted regulator speed limit for all streets within the City limits. The TDOT request is to lower the speed limit in that section of roadway from 55mph to 50mph.

Following is a brief analysis of this stretch of roadway regarding the TDOT request:

1. Complaints have been received by the City concerning near collisions in which one vehicle slows down to turn into a driveway or patrol road, and the vehicle following does not slow. In some of these incidents, distracted or inattentive driving was likely a contributing factor. TDOT has provided warning signs at many of these locations; however, a reduction in speed might also provide more reaction time.
2. TDOT has provided the results from a speed study conducted which showed the 50 percentile speed was 43mph and the 85 percentile speed was 49mph (see attachment). This indicates the majority of the traffic is already traveling below the proposed speed limit. In addition, because of the number of curves and driveways, there are seven (7) different locations where advisory signs recommend reduction in speed varying from 35mph to 25mph.
3. After comparing existing signage to the City Ordinance, there are multiple discrepancies. It is my belief that existing conditions make any posted speed limit unenforceable.
 - a. City Ordinance 15-509 (5) SR-95 identified as White Wing Road from SR-95, then identified as Oak Ridge Turnpike to White Wing Bridge, has a maximum speed limit of 55mph.
 - b. The speed limit presently posted in the majority of this section is 50mph; except for the south portion, approximately 950' south of Wipp Road extending to the bridge at Melton Lake, is posted at 45mph.

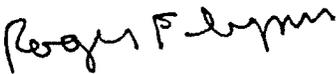
Based on the analysis above, my recommendation is to leave the speed limit postings as they currently exist and change the Ordinance to match the signage. The steps to implement this recommendation include:

1. Deleting item five in section 15-509 of the City Ordinance.
2. Add a new item three to section 15-508 of the City Ordinance entitled, "*Maximum limits on specific streets – fifty (50) miles per hour*" to include White Wing Road from Oak Ridge Turnpike to a point approximately 950' south of Wipp Road.
3. Add a new item nine to section 15-507 to be entitled, "*Maximum limits of specific streets – forty five (45) miles per hour*" to include White Wing Road from approximately 950' south of Wipp Road to White Wing Bridge.

Oak Ridge Police Department endorses this recommendation; the net result to these changes will not affect the traveling public.

It has been requested by TDOT that the Traffic Safety Advisory Board review the proposed changes to the City Code of Ordinance sections 15-507, 15-508, and 15-509 at the August 22, 2017 meeting for a recommendation to be presented to City Council for consideration of first reading at the September 11, 2017 Council meeting.

Sincerely,



Roger Flynn, P.E.
City Engineer

Enclosures

cc: Shira McWaters, P.E. Public Works Director

UNAPPROVED

TRAFFIC AND SAFETY ADVISORY BOARD

August 15, 2017

Meeting Minutes

The August meeting of the TSAB was held at 7 PM on Tuesday, August 15, 2017, in the training room of the municipal building (room 104). Meeting was called to order at 7:06 PM

Present were:

William Polfus, Jane Shelton, Jana Humphrey, Hannah Oran, Melissa McMahan, Marty Adler-Jansy, Ilona Kazocha, Andrew Howe, Halfen Hoyt

Absent was:

Roger Flynn

Visitor: Ellen Smith, City Councilman

1. Minutes from the July 18, 2017 meeting were approved unanimously.
2. Issues or concerns

Discussion regarding potholes in and around the city; Lafayette, Michigan, New York streets. Newridge and West Outer, one layer of pavement off that was mentioned.

Questions for Roger regarding timing for pothole repair; at least temporary work to try and remediate the issues. Some roads seem to have that done and other do not.

Ellen shared that Tennessee Ave is getting little work due to the water main maintenance needed in that area. This budget will actually cover the repavement costs.

Mentioned about the lack of signage at the intersection near Golden Oak and TJ Maxx and vehicles taking their chances with the traffic flow; also, that the roundabout needed directional signage in place since it's new for Oak Ridge drivers and need some direction. Jane is going to share with the Planning Commission; we recommend that if there is anything that Roger can do in his capacity then we think that is a good idea.

3. City Blueprint

Several TSAB members attended the blueprint session at the country club on 7/27/17. It was shared that a resident had concerns about the lack of a turning lane near Southwood, preventing an easy turn left out of Southwood going West. This was shared with Roger via email so that we could discuss in depth during the TSAB meeting. Roger shared that he reviewed the intersection both on paper and on site to review how it was set up and why. It appears to technically be correct. They used the hatched area to transition from the shared use center turn lane to a divided highway with a grass median. Since there are no more neighborhoods past Southwood going west there does not seem to be a need for expanding the center turn lane. This saves asphalt and grass is easier to contend with. The shared turn lanes are actually for turning, but not for storage or acceleration. You actually are not supposed to pull into them and store.

There were items that come from the west end City Blueprint meeting; 12 items for TSAB discussion. 2 of the 12 dealt with putting in a red light at Wisconsin. 3 dealt with speeds. Other discussions were around trees and parking on the street.

A resident, Bill Wallace, sent a letter to Roger about the access road near Emory Valley/Fairbanks/Briarcliff that has been closed; he wants the city to consider redoing the intersection of

Briarcliff and Emory. Roger responded, explaining lack of funding, lack of right of way and the needed purchase of property to do that. Also, the right of way is small, a signal pole would have to be relocated with longer masts and a new signal head and controller. Overall costs would be around \$300,000.00.

This next listening session is for the Emory Valley, Melton Lake, area and will be held on 8/24/17.

We discussed the handouts they have at the meetings regarding demographics, how the meetings are going, etc. and in regards to what would be done with the information once it's compiled.

4. Additional business

TSAB was advised of a TDOT request. The information was sent to all board members via postal mail.

Per the mailing:

TDOT officials contacted Roger Flynn regarding lowering the speed limit on TN SR 95 between the SR 95/SR 58 interchange and the Melton Lake Dam Bridge. This stretch of roadway is a State route, not a City street.

The City was contacted by TDOT concerning the speed limit since this segment of SR 95 is located within City limits. COR has jurisdiction regarding the posted regulator speed limit for all streets within the City limits. The TDOT request is to lower the speed limit in that section of roadway from 55 mph to 50 mph.

Additional information regarding the analysis of the roadway is included in the mailing dated 8/4/17 from Roger Flynn to William Polfus, TSAB Chairman and is attached to these minutes.

Rogers recommendation to TSAB was to leave the speed limit postings as they currently exist and change the Ordinance to match the signage. The steps to implement this recommendation include:

1. Deleting item five in section 15-509 of the City Ordinance
2. Add a new item three to section 15-508 of the City Ordinance entitled 'Maximum limits on specific streets - fifty (50) miles per hour' to include White Wing Road from Oak Ridge Turnpike to a point approximately 950' south of Wipp Road
3. Add a new item nine to section 15-507 to be entitled 'Maximum limits on specific streets - forty five (45) miles per hour' to include White Wing Road from approximately 950' south of Wipp Road to White Wing Bridge.

ORPD endorses the recommendation; the net result to these changes will not affect the traveling public.

A motion was made by Marty Adler-Jasny to accept Roger's recommendations and forward to city council for their consideration. Halfen Hoyt seconded the motion; there was no further discussion, and the motion passed unanimously.

5. Request for new business items or future briefings

No requests were made.

6. The meeting was adjourned at 815PM.

Next meeting will be 9/19

Melissa McMahan
TSAB Secretary

TITLE

AN ORDINANCE TO AMEND TITLE 15, TITLED "MOTOR VEHICLES, TRAFFIC AND PARKING," CHAPTER 5, TITLED "SPEED REGULATIONS," OF THE CODE OF ORDINANCES, CITY OF OAK RIDGE, TENNESSEE, TO LOWER THE SPEED LIMIT ON STATE ROUTE 95 (SR-95)(OAK RIDGE TURNPIKE) BETWEEN THE SR-95/SR-58 INTERCHANGE TO THE OAK RIDGE CITY LIMITS.

WHEREAS, the City received a request from the Tennessee Department of Transportation (TDOT) to lower the speed limit on State Route 95, also known as the Oak Ridge Turnpike, from its intersection with State Route 58 to the Oak Ridge City Limits; and

WHEREAS, as part of the review of TDOT's request, the Public Works Department noted that not all posted speed limits signs in this location match the current ordinance language, and the City Code needs to be amended to reflect current signage.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE:

Section 1. Title 15, titled "Motor Vehicles, Traffic and Parking," Chapter 5, titled "Speed Regulations," Section 15-507, titled "Maximum limits on specific streets – forty-five miles per hour," of the Code of Ordinances, City of Oak Ridge, Tennessee, is hereby amended by adding a new subsection (9), which new subsection shall read as follows:

Section 15-507. Maximum limits on specific streets – forty-five miles per hour.

- (9) White Wing Road from a point approximately 950' south of Wipp Road to White Wing Bridge.

Section 2. Title 15, titled "Motor Vehicles, Traffic and Parking," Chapter 5, titled "Speed Regulations," Section 15-508, titled "Maximum limits on specific streets – fifty miles per hour," of the Code of Ordinances, City of Oak Ridge, Tennessee, is hereby amended by adding a new subsection (3), which new subsection shall read as follows:

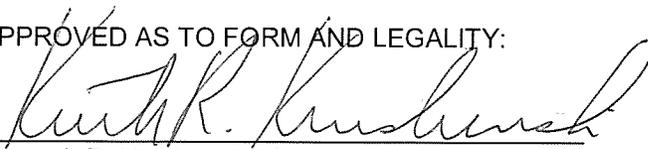
Section 15-508. Maximum limits on specific streets – fifty miles per hour.

- (3) White Wing Road from Oak Ridge Turnpike to a point approximately 950' south of Wipp Road.

Section 3. Title 15, titled "Motor Vehicles, Traffic and Parking," Chapter 5, titled "Speed Regulations," Section 15-509, titled "Maximum limits on specific streets – fifty-five miles per hour," of the Code of Ordinances, City of Oak Ridge, Tennessee, is hereby amended by deleting subsection (5) in its entirety without replacement.

Section 4. This ordinance shall become effective ten (10) days after adoption on second reading, the welfare of the City of Oak Ridge requiring it.

APPROVED AS TO FORM AND LEGALITY:


Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

First Reading: _____

Publication Date: _____

Second Reading: _____

Publication Date: _____

Effective Date: _____

**PUBLIC HEARING
AND
FINAL ADOPTION
OF ORDINANCES**

COMMUNITY DEVELOPMENT MEMORANDUM
PLANNING DIVISION
17-43

DATE: 8/25/2017
TO: Mark Watson, City Manager
FROM: Jordan Clark, Senior Planner *JC*
THROUGH: Wayne Blasius, Community Development Director *WB*
SUBJECT: Zoning Ordinance Amendment – IND-3 Permitted Uses

Introduction

In response to the proposal for the new airport on the former K-25 site, staff has compiled an amendment to the Zoning Ordinance regarding airports.

Funding

No funding is necessary to approve this request.

Analysis

Currently, airports are only allowed in the IND-3 zoning district as a Special Exception requiring Board of Zoning Appeals approval. An amendment to the Zoning Ordinance which would place airports into the Permitted Principal Uses category would allow such facilities without approval of the Board of Zoning Appeals. A site plan and general site criteria would still be required as well as all other relevant permits.

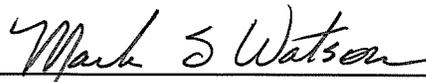
The proposed amendment is to Section 8.03 IND-3 Industrial Districts. Airports are currently listed under subsection (d) Uses Requiring Board of Zoning Appeals Special Exception Permit. The amendment would move airports to subsection (b) Permitted Principal Uses.

Recommendation

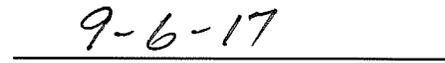
The amendment was reviewed and discussed by the Oak Ridge Planning Commission and recommended for approval to City Council by a vote of 10 – 0 during the regularly scheduled meeting on August 17, 2017.

City Manager's Comments:

I have reviewed the above issue and recommend Council action as outlined in this document.



Mark S. Watson



Date

TITLE

AN ORDINANCE TO AMEND ORDINANCE NO. 2, TITLED "THE ZONING ORDINANCE OF THE CITY OF OAK RIDGE, TENNESSEE," BY AMENDING SECTION 8.03, TITLED "IND-3, INDUSTRIAL DISTRICTS," TO ADD AIRPORTS AS A PERMITTED PRINCIPAL USE AND TO DELETE AIRPORTS AS A USE REQUIRING BOARD OF ZONING APPEALS APPROVAL.

WHEREAS, the City of Oak Ridge is continually reviewing the Zoning Ordinance to update provisions and make it more understandable to the general public; and

WHEREAS, this amendment will update the Zoning Ordinance to change airports from a use requiring Board of Zoning Appeals (BZA) approval to a permitted principal use in IND-3, Industrial Districts; and

WHEREAS, the following change has been submitted for approval or disapproval to the Oak Ridge Municipal Planning Commission and the Commission has approved the same; and

WHEREAS, a public hearing thereon has been held as required by law.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE:

Section 1. Ordinance No. 2, titled "The Zoning Ordinance of the City of Oak Ridge, Tennessee," Article VIII, titled "Industrial Districts," Section 8.03, titled "IND-3, Industrial Districts," Subsection (b), titled "Permitted Principal Uses," is hereby amended by adding a new Subsection (b)(7), which new subsection shall read as follows:

- Section 8.03 IND-3, Industrial Districts
 - (b) Permitted Principal Uses:
 - 7. Airports.

Section 2. Ordinance No. 2, titled "The Zoning Ordinance of the City of Oak Ridge, Tennessee," Article VIII, titled "Industrial Districts," Section 8.03, titled "IND-3, Industrial Districts," Subsection (d), titled "Uses Requiring Board of Zoning Appeals Permit," is hereby amended by deleting Subsection (d)(6), "Airports," in its entirety without replacement.

Section 3. This ordinance shall become effective ten (10) days after adoption on second reading, the welfare of the City of Oak Ridge requiring it.

APPROVED AS TO FORM AND LEGALITY:


Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

First Reading: 9/11/2017
Publication Date: 9/14/2017
Second Reading: _____
Publication Date: _____
Effective Date: _____

LEGAL DEPARTMENT MEMORANDUM
17-30

DATE: August 29, 2017
TO: Honorable Mayor and Members of City Council
FROM: Kenneth R. Krushenski, City Attorney
SUBJECT: CITY CODE AMENDMENT – §3-601(1) – EXPAND JURISDICTION OF ADMINISTRATIVE HEARING OFFICER

Introduction

An item for the agenda is an ordinance to amend the City Code to amend §3-601(1) to expand the jurisdiction of the Administrative Hearing Officer for compliance with state law.

Background

City Code §3-601(1) sets forth the jurisdiction of the City's Administrative Hearing Officer to hear violations of the City's building, residential, plumbing, electrical, mechanical, energy, and property maintenance codes. Effective June 6, 2017 with the passage of Public Chapter 489, the jurisdiction of municipal administrative hearing officers was expanded to include violations of locally adopted zoning codes. For compliance with state law, the City desires to amend City Code §3-601(1) to include zoning ordinance violations to the list of violations allowed to be brought before the Administrative Hearing Officer.

Recommendation

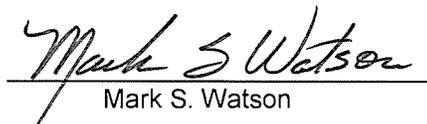
Approval of the attached ordinance is recommended.


Kenneth R. Krushenski

Attachment: Proposed Ordinance

City Manager's Comments:

I have reviewed the above issue and recommend Council action as outlined in this document.


Mark S. Watson

9-6-17
Date

TITLE

AN ORDINANCE TO AMEND SECTION 3-601, TITLED "ADMINISTRATIVE HEARING OFFICER," OF THE CODE OF ORDINANCES, CITY OF OAK RIDGE, TENNESSEE, BY DELETING SUBSECTION (1) IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SUBSECTION (1) TO EXPAND THE JURISDICTION OF THE ADMINISTRATIVE HEARING OFFICER FOR COMPLIANCE WITH STATE LAW.

WHEREAS, Tennessee Code Annotated §6-54-1002(a) was amended in 2017 through Public Chapter 489 to expand the jurisdiction of municipal administrative hearing officers to include violations of locally adopted zoning code; and

WHEREAS, for compliance with state law, the City desires to amend City Code §6-101(1) to expand the City's Administrative Hearing Officer's jurisdiction to include violations of the City's Zoning Ordinance.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE:

Section 1. Title 3, titled "Municipal Court," Chapter 6, titled "Administrative Hearing Officer," Section 3-601, titled "Administrative Hearing Officer," of the Code of Ordinances, City of Oak Ridge, Tennessee, is hereby amended by deleting Subsection (1) in its entirety and substituting therefor a new Subsection (1) which new subsection shall read as follows:

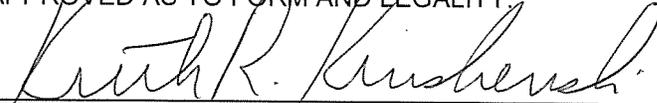
Sec. 3-601. Administrative Hearing Officer.

- (1) In accordance with Tennessee Code Annotated §6-54-1001 et seq., there is hereby created the office of Administrative Hearing Officer to hear violations of any of the provisions codified in the city's codes regulating building and property maintenance, including:
 - (a) Locally adopted building codes;
 - (b) Locally adopted residential codes;
 - (c) Locally adopted plumbing codes;
 - (d) Locally adopted electrical codes;
 - (e) Locally adopted mechanical codes;
 - (f) Locally adopted energy codes;
 - (g) Locally adopted property maintenance codes;
 - (h) Locally adopted zoning codes; and
 - (i) Ordinances regulating any subject matter commonly found in the codes mentioned above.

The Administrative Hearing Officer is not authorized to hear violations of codes adopted by the state fire marshal pursuant to Tennessee Code Annotated §68-120-101(a) enforced by a deputy building inspector pursuant to Tennessee Code Annotated §68-120-101(f).

Section 2. This ordinance shall become effective ten (10) days after adoption on second reading, the welfare of the City of Oak Ridge requiring it.

APPROVED AS TO FORM AND LEGALITY:



Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

First Reading: 9/11/2017
Publication Date: 9/14/2017
Second Reading: _____
Publication Date: _____
Effective Date: _____

RESOLUTIONS

PUBLIC WORKS DEPARTMENT MEMORANDUM
17-45

DATE: August 25, 2017
TO: Mark S. Watson, City Manager
FROM: Shira A. McWaters, P.E., Public Works Director
SUBJECT: **REQUEST FOR PROFESSIONAL SERVICES AGREEMENT – SYSTEM-WIDE LEAK DETECTION SERVICES**

Introduction

An item for City Council consideration is the recommendation for a Professional Services Agreement with WachsWater Services for A System Wide Water Leak Detection Survey in the estimated amount of \$103,429.

Funding

Funding for professional services is available from the Waterworks fund.

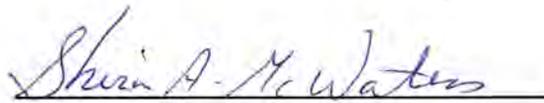
Consideration

Due to the City's high percentage (30%) of unaccounted water, the City of Oak Ridge requested proposals from qualified companies to provide a System-Wide Leak Detection Survey. A total of eight (8) proposals were received. From the proposals a four-person panel to select the best one, based on qualifications, to provide this service to the City of Oak Ridge. The panel ranked the top three (3) using a spreadsheet based on points for several topics and then meet to discuss their findings. It was determined that WachsWater Services ranked the highest of the proposals reviewed and was asked to provide a cost proposal to complete the System-Wide Leak Detection Survey. The information received from this survey should allow the City to locate where leaks are in order to repair; therefore, lowering the percentage of unaccounted water and cost savings due to the reduction in unaccounted for water.

Recommendation

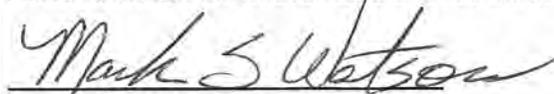
A written cost proposal for professional services was received on September 27, 2017 and reviewed by staff. Based on the review of the scope of work and submitted cost proposal, Staff recommends a Professional Services Agreement with WachsWater Services. Adoption of the attached resolution is recommended as submitted.

Attachment(s)
Submitted Proposal for Professional Services.


Shira A. McWaters, P.E.

City Manager's Comments:

I have reviewed the above issue and recommend Council action as outlined in this document.


Mark S. Watson

10-4-17

Date

September 5, 2017

The City of Oak Ridge
Public Works Department
100 Woodbury Lane
Oak Ridge, TN 37830

RE: RFP System-Wide Leak Detection Survey

Wachs Water Services (WWS) is pleased to submit to the City of Oak Ridge the enclosed proposal to provide a leak detection survey utilizing advanced processes, equipment, technology and a team of highly trained experienced professionals. Our team will survey, pinpoint and document more listening points than any other proposal submitted and will provide the most accurate and complete water loss survey possible for the City. Wachs Water Services performs leak detection services nationwide and we have all the human resources, financial capital and advanced equipment needed to deliver a satisfactory conclusion to the project.

To provide our customers with value added service, Wachs Water Services will publish project information to the City of Oak Ridge management and project personnel as it is captured in real-time. This project information, which includes individual listening points, confirmed leaks and the specific extent of the areas surveyed will be made available through a password protected GIS web mapping application (ProjectTracker™). This will provide unparalleled transparency to the leak detection process and keep the City informed on the execution of the work. Our proposal provides extensive detail regarding our general approach which will be:

- Provide a strong and proven project management team supported by industry experts
- Utilize project-tested innovative tools to deliver cost-effective solutions for successful leak detection
- Leverage an experienced team with a highly interactive approach and the level of communication the City requires for a successful project.
- City staff can monitor program and view leak reports in real time using ProjectTracker™
- Every listening point recorded and mapped in real time

We are very pleased to submit the following proposal for your consideration.

Sincerely,

Brad Gresham

Brad Gresham
Business Development Manager
Mobile: (678) 340-6850
bgresham@wachsws.com

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System-Wide Leak Detection Survey

Similar & Successful Project Management History

Wachs Water Services understands that a Leak Detection Survey is an important revenue reclamation activity for the City. We will develop a program plan that meets your objectives and delivers the results you want. We are the nation's experts at delivering distribution system programs and we know how to achieve program objectives. Wachs Water Services brings added value to all our programs through our distribution system experience and best practices. We are pleased to share our knowledge with you that we have acquired from across the country.

The goal of any leak detection survey is to accurately and economically identify as much leakage as possible. The key is to balance the investment with the potential reward. The primary driver for both the investment and potential reward (in terms of identified leakage) is the resolution of the leak survey. Not unlike a flat screen television, leak survey resolution is a measure of detail—the higher the detail (the more data points/sound sounding samplings), the higher the resolution. Some water systems can effectively be surveyed with low resolution approaches (such as hydrants only), while other systems require a much higher resolution approach to be effective (such as all hydrants, valves, and service curb stops).

There are three primary environmental variables that drive the resolution required for an effective leak detection survey:

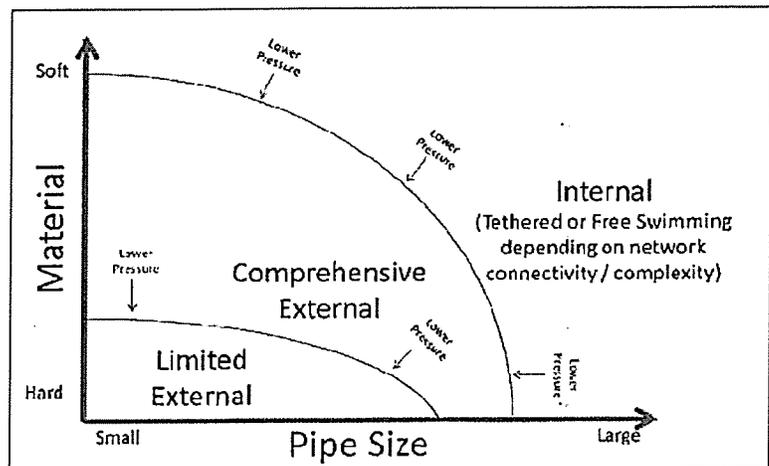
1. Pipe material: softer materials (i.e. plastic) do not transmit sound as effectively as hard materials (i.e. ductile iron).
2. Pipe size: larger diameter pipes have a greater capacity to attenuate (absorb) sound.
3. Water pressure: all else being equal, leaks at lower pressures create a less intense noise signature.

The image to the right demonstrates the relationship between the variables and the most appropriate survey resolutions given the system conditions.

Wachs Water Services employs a two-phase approach to leak detection programs. The first phase is a comprehensive survey where all targeted listening points are surveyed with sonic acoustic equipment and any assets with possible or strong leak noises are flagged. In addition to potential leaks, asset defects and mapping discrepancies are also documented.

Wachs Water Services approach to leak surveys is unique. In addition to collecting data on leak sounds we individually capture GPS and additional information at each sounding point (hydrant, valve, curb-stop, etc.). This information is available to city staff in real-time through ProjectTracker™

The most cost effective survey resolution is determined by evaluating pipe material, pipe size and water pressure.





System-Wide Leak Detection Survey

The second phase is to provide quality assurance (QA) / quality control (QC) of all flagged leak noises from the first phase. After leak noises are confirmed during the second phase, Wachs Water Services' leak technicians will line locate the immediate area and begin pinpointing with a combination of a correlator and ground microphone equipment.





Scope of Work

SUMMARY OF EXTERNAL LEAK DETECTION PROCEDURES

The purpose of the leak detection survey is to accurately identify specific locations as requested by the City, which can then be excavated by the City's staff and remediated as necessary to reduce any amount of water loss and recover lost revenue.

Overview of Leak Detection Activities

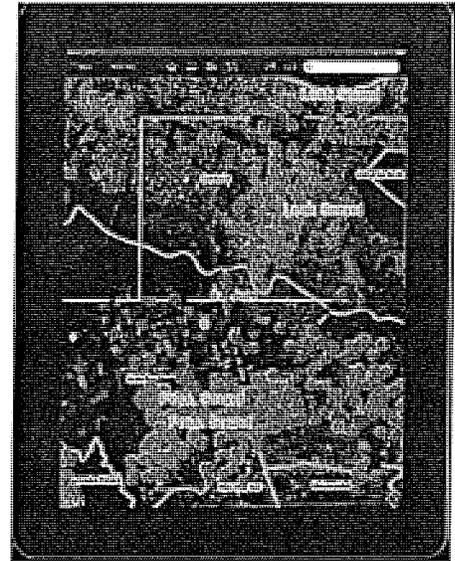
Wachs Water Services will ensure the highest efficiency and effectiveness of our leak detection efforts. Prior to the daily execution of any leak detection survey activities all the pre-work and planning will have been completed. The Project Manager will oversee all activities:

The sequence of work, on a daily basis, will include all of the following activities.

- Safety meeting
- Provide appropriate traffic control and safety measures
- Locating starting asset to begin survey
- Listen to assets to identify audible leaks
- If no leak sound heard, move to the next identified asset in the leak detection survey.
 - If a leak sound is heard, identify other nearby assets to narrow the leak location point (valves/meter boxes, etc.)
 - Begin correlation between the two (2) assets with highest audible sound of suspect leak
 - Place correlator sensors on two (2) identified assets (this is in areas where metallic pipe is known)
- On the control box, enter all the known information (distance, pipe material, etc.)
- Begin correlation
- If correlators can identify the leak and the main location is known, then mark off the area with a measuring wheel and white paint.
 - If the correlators can identify the leak, and the main location is not known, then use a ground microphone to pinpoint the leak location and mark with white paint, a four (4) ft. by six (6) ft. box with a nail and ribbon
- GPS Map location of leak and assets used to correlate
- Return the work area to its original state

Listening Point Access

The City will provide WWS with at least one (1) copy of their most current water distribution maps for the project area.



Map section with color coding that shows listening points, assets (listening points) with discrepancies and leak locations. These views are also available through ProjectTracker™ the free web-based application.





System-Wide Leak Detection Survey

Task 1 - Planning

Our approach for this project utilizes a systematic methodology for performing leak detection activities.

Task 1.1: Work Schedule

Upon receipt of the Notice to Proceed (NTP), we will schedule the deployment of one team to the City. This team will sequentially progress through the City until the scope is completed. We will prepare and submit to the City a Draft Work Plan providing details of the program for approval including:

- Project timeline
- List of area to be surveyed
- Structure of the data to be recorded (naming, organization of the data, formats, etc.)
- Protocols to coordinate between Pure and the City the sharing of data, reviewing the data collected.
- Protocols to handle public inquiries
- Process to integrate the data

Task 1.2: Coordinate and attend kickoff meeting

On the first day of the work onsite, Wachs Water Services will attend a Kick off meeting. During the meeting, the approved draft work plan will be reviewed and communications protocols will be established between WWS and the City.

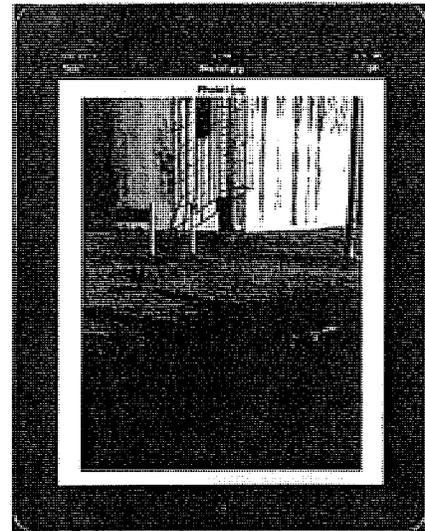
Task 2 - Acoustic Leak Survey

Task 2.1: Survey Site Traffic Control and Security

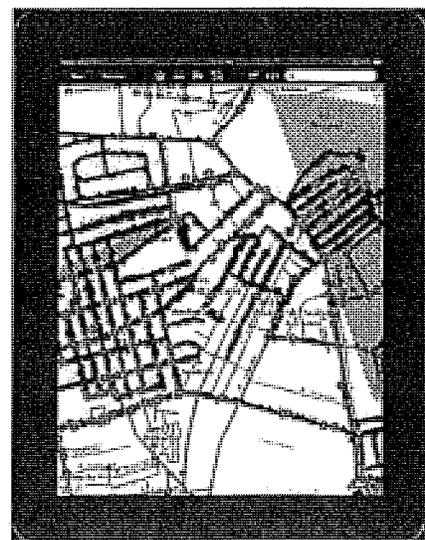
Wachs Water Services recognizes that every environment presents its own challenges with regard to a safe worksite. Wachs Water Services tailors safety measures to each environment's specific challenges. To ensure safe worksites, Wachs Water Services will conduct a physical security survey and assessment to determine areas that have a potential for safety issues.

For work areas that are determined to have potential safety issues, we will adopt additional security measures, adjust working hours and provide additional employee training to ensure workers' safety as they conduct surveys in these areas. Our workplace safety strategy includes measures to detect, assess, and manage threats. Prior to working in each area, Wachs Water Services will:

- Conduct a physical security survey and assessment of the area.
- Establish procedures for addressing threats and threatening behavior.



Picture of Located Leak





System-Wide Leak Detection Survey

- If necessary, provide access to outside resources, such as threat assessment professionals.
- Train field personnel on early recognition of warning signs of problematic situations.
- Train field personnel on ways of preventing or defusing volatile situations
- Provide a standard response action plan for volatile situations, including availability of assistance and communication procedures.

All Wachs Water Services field crew personnel are trained in specific traffic control procedures. Crew members will be provided traffic control signs, rotating warning lights, corner strobe lights, cones, and traffic arrow boards on the trucks and will use these traffic control tools to set up safe workplaces as needed. If traffic control is very difficult in certain areas then WWS may shift to night operations (for ease of traffic control).

Task 2.2: Leak Survey

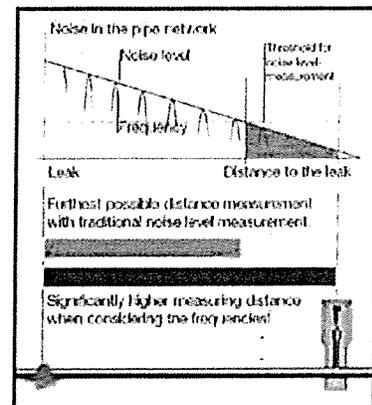
WWS employs a proven two phase approach to large leak detection programs. The first phase is a comprehensive survey where all targeted listening points (fire hydrants and in-line valves) are surveyed with sonic acoustic equipment and any assets with possible or strong leak noises are flagged. Listening points shall include water main valves, meters and hydrants and any other appurtenance necessary to perform a thorough leak survey. When additional acoustic information is required, and water main access is limited, ground microphones will be utilized on ground surfaces for surveying. In addition to potentials leaks, asset defects and mapping discrepancies are also documented. Note: WWS will listen on valves that can be located, lid can be removed and the operating nut is accessible from the surface without cleanout.

Task 2.3: Leak Correlating/Pinpointing Leaks

Correlation is a way of pinpointing leaks in water mains. A leak in a pipe under pressure creates noise that travels through the pipe walls, the surrounding ground and along the contents of the pipe. If two highly sensitive correlation microphones are attached to two different listening points on a pipe with an identified potential leak, sound from the leak takes longer to travel to the microphone furthest from the leak; this is referred to as the "time delay". Utilizing this and other information (pipe diameter, material and length of section under test), the exact leak position can be calculated by using the correlators. Once a suspected leak is correlated, a Wachs Water Services technician will then use a ground microphone to confirm the leak. The leak will then be mapped via GPS and marked accordingly. Since the accuracy of pinpointing relies primarily on the acoustic characteristics of the pipe, the accuracy of the pipe size, length, material and lateral configurations, overnight, and possibly longer term logging may be utilized to record acoustic information, at the discretion of the City.

Zoomed in view of map on iPad in the field.

Best Sound Results



The diagram above shows the difference between trying to record the sound and establishing the frequency of the sound





System-Wide Leak Detection Survey

Task 3 – Data Capture and Reporting

Task 3.1: Data Capture

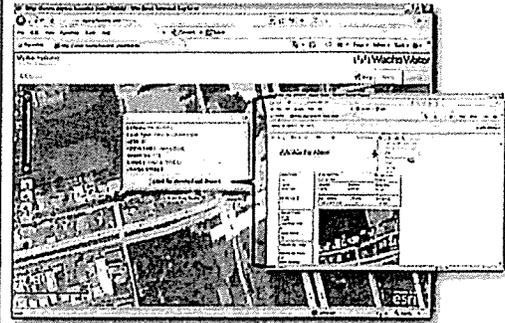
GIS data collection and management isn't a task in our workflow -- it's the foundation. Our approach is to assign, document and manage all activities from a central GIS database. All observations made in the field will be captured in GIS in real-time on an iPad utilizing our ProjectTracker™ Mobile work management solution. Field technicians will not only document which mains have been surveyed, they will individually capture information at each sounding point (hydrant, valve, curb-stop, etc.) This time and geo-stamped survey data not only provides proof of service evidence, it is also the vehicle by which valuable asset management data will be captured and delivered. This asset management data will include asset defects (such as a hydrant with a missing cap) and mapping discrepancies (such as a valve found in the field but not shown in GIS). Once the survey and leak data is captured in the field, it will be immediately available, in real-time, via ProjectTracker™ Online; our secure web browser-based mapping and reporting application. In addition to pertinent leak details such as leak type, estimated loss, date/time pinpointed, and location information, a digital photograph will be captured at each pinpointed leak site.

In addition to live access to the project database via ProjectTracker™ Online, our staff of certified GIS Professionals will work with the City's staff to develop an Extract-Translate-Load (ETL) Plan to ensure that all relevant data elements that are captured in the field (or calculated during post processing and analysis) have a documented path to the final resting place in a database within the City's existing enterprise database(s). One of the core elements of the ETL plan is a Data Map that documents the source and destination for each data field. Our GIS team has extensive experience in developing these plans and will work closely with stakeholders at the City to ensure the right information ends up in the right place.

Task 3.2: Structured Incremental Reporting

At a frequency to be agreed upon (typically daily, weekly or biweekly), WWS will deliver a progress report which will include the following information:

- Number of miles surveyed by day for the reporting period
- Section maps indicating areas surveyed and leaks pinpointed
- Number (and classification) of leaks detected and pinpointed during the reporting period
- List of asset defects (such as missing lids, valves that cannot be located and hydrants missing caps)
- List of mapping discrepancies (such as a hydrant found in the field that isn't included in GIS)



ProjectTracker™ Online



ProjectTracker™ Online





System-Wide Leak Detection Survey

- All progress totals to date - miles of main surveyed, number and classification of leaks detected and pinpointed, and an estimate of total water loss to date
- Miles of survey remaining
- Estimated completion date

Task 3.3 Final Report:

At the completion of the survey, WWS will submit the completed progression map detailing the areas of the water distribution system that have been surveyed. WWS will prepare a final report that will contain legible copies of all individual leak reports produced during the survey. The Final Report will include a breakdown of the sources of leakage i.e.: number of leaks on mains broken down by material, services, main line valves, hydrants etc., a cumulative total of estimated leakage for each category and project performance data such as level of staffing, feet surveyed per day and general work findings and observed problems. This final report shall be made available for submission to the City within (30) working days of the completion of the field work.

City of Dallas Pilot Leak Detector Survey			
ADDRESS 200	SERVICE REGISTRATION 1	LEAK REPORT IN 1	
STREET DASH ROAD HWY	PLAT 1137	T.C.B. 2/15/05	RESPONSIBILITY ODA
600 63 STREET Springtown Station	DATE 04/29/05	TIME 12:00:00 PM	CLASS 1
			STATUS ACTIVE
LEAK TYPE SERVICED CITY			
SIZE OF LEAK 2.5 GPM			
EST. DFD 4,322.000			
REF. OFF 1375-000-001			
VISUAL WATER FD			
PIPE SIZE 30IN			
MATERIAL D			
DEPTH AND MAP 3 FT DA			
COVER DASH HWY			
ACCURATE YES			
CORRELATION YES			
LOGGED OVERSIGHT NO			
TECHNICIAN DASH HWY			
	SEARCHED BY: PERSIMMONS, PERSIMMONS, GERRARD	MAP/PRO YES	SUBMITTED YES
	COMMENTS: LEAK CLOSED BY REPAIR WORKING ON LEAKS		

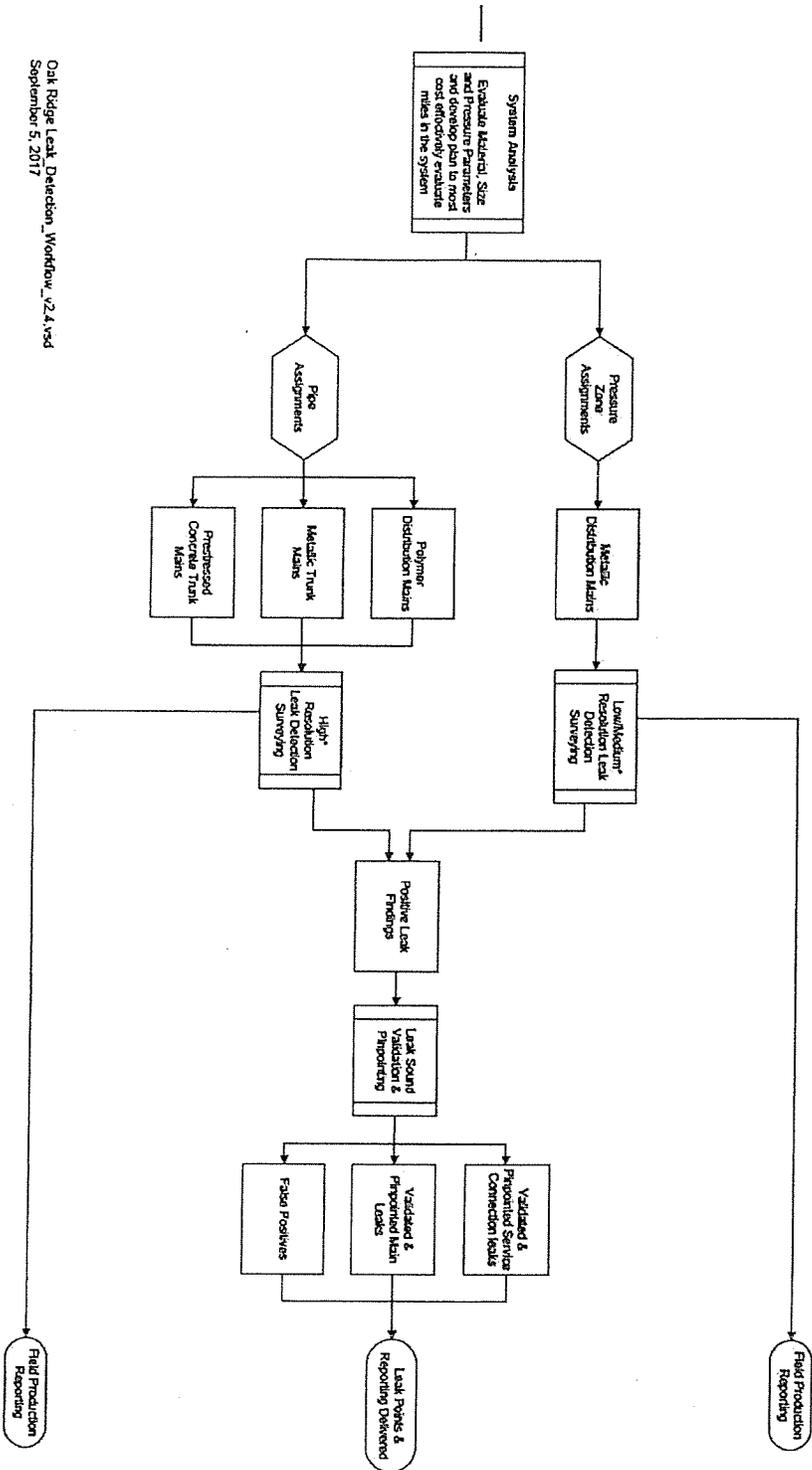
Detailed Leak Report





System-Wide Leak Detection Survey

Oak Ridge, TN - Proposed Leak Detection Workflow



Oak Ridge Leak Detection Workflow_v2.4 vsd
September 5, 2017

Workflow and Other Documentation

The workflow diagram pictured right is a visual representation of our external leak detection workflow process which demonstrates and describes the process we will use to perform the work for this project from receipt of an assignment through data delivery to the City.



System-Wide Leak Detection Survey

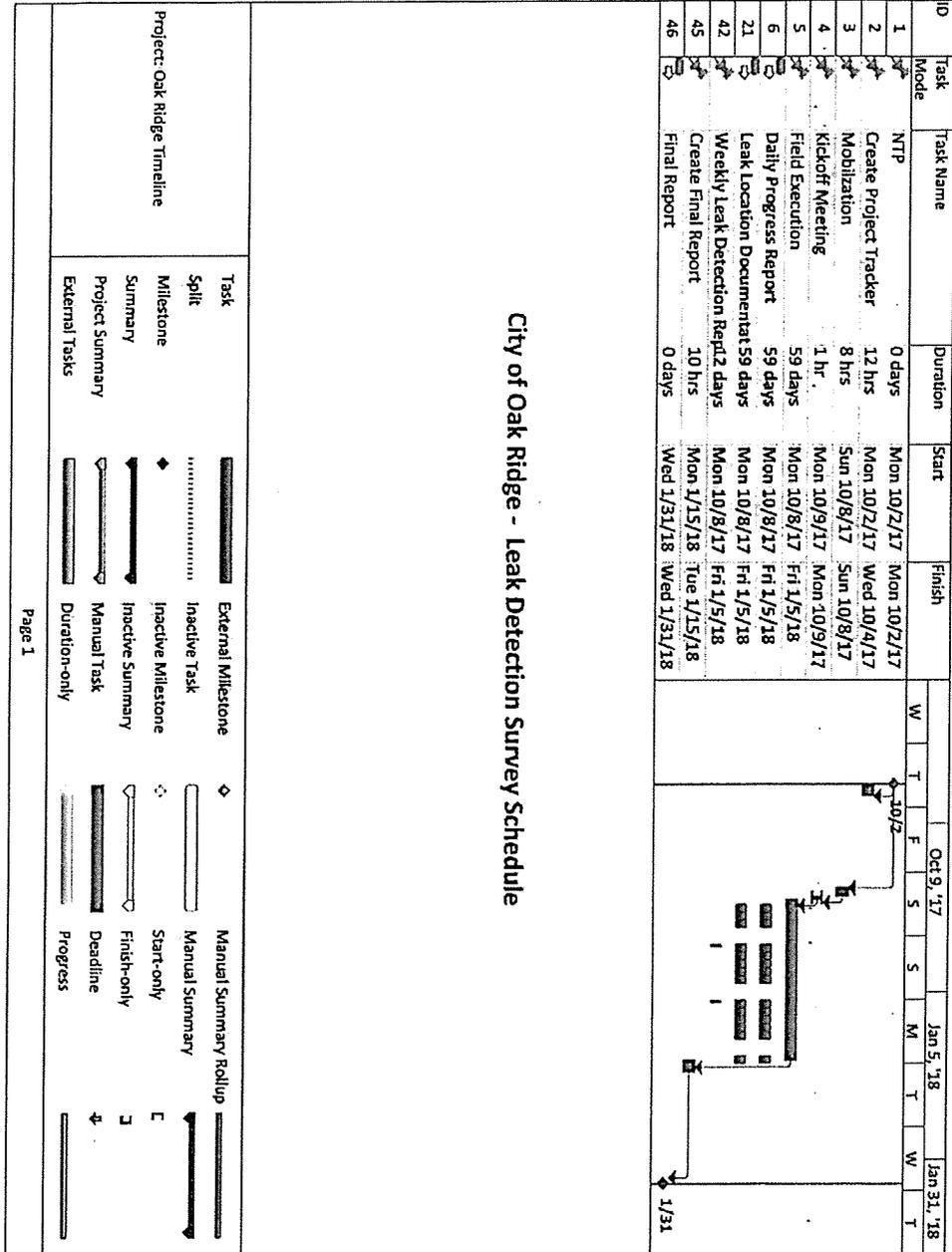
Proposed Schedule

Scheduling is an ongoing, critical process for the successful completion of this program. In our view, it is best to drive the program scheduling on a planned basis by always looking forward and being prepared for contingencies. Executing the work in a pre-planned coordinated manner while following written procedures will:

- Reduce the amount of traffic disruption
- Reduce the disturbance of the water system
- Standardize field activities to ensure work is performed in a safe manner
- Ensure consistent data is collected
- Reduce the crew work area set-up and take down time
- Reduce the amount of crew transit time

We estimate this program will take approximately two months.

City of Oak Ridge - Leak Detection Survey Schedule





System-Wide Leak Detection Survey

EQUIPMENT

We understand that this leak detection program will be an important revenue reclamation activity for the City. We have performed leak detection services for over ten years for clients such as the City of San Antonio, the City of Austin, the City of Baltimore and the Puerto Rico Aqueduct Authority (PRASA). If selected, we will deliver the people, processes and equipment to ensure this is a successful endeavor. Wachs Water Services is agnostic when it comes to the selection of leak detection equipment. Since we aren't a manufacturer and don't have any formal/exclusive relationships with manufacturers, we have complete flexibility to deploy the most effective tool for the job.

There are three primary categories of specialized equipment we propose to deploy to perform leak detection:

1. Noise detection equipment
2. Correlating equipment
3. Line locating equipment

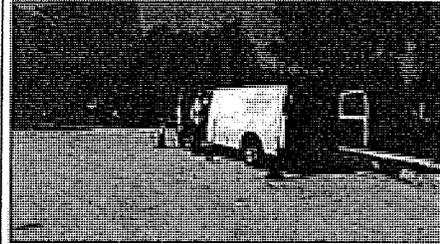
Noise Detection Equipment

The following leak noise detection equipment will be used to perform the leak survey.

FCS Lmic - We use the Lmic for general leak sounding operations within our programs. The Lmic can be fitted with either a tripod foot (for use as a ground microphone) or probe rods (for sounding at fittings).

Vivax Metrotech HL-5000 - This equipment Utilizes state of the art DSA (dual segment analysis) technology to simultaneously measure current and minimal noise values. This dual analysis allows the user to understand the total ambient noise (current) vs. the noise associated with the appurtenance that is being evaluated (minimal). The measurements are displayed simultaneously on the devices digital display. Unlike most listening devices which simply amplify sound, the HL-5000 can analyze the real-time frequency of a sound measurement which will late assist the user in determining correlation filters. This device also allows for 9 simultaneous DSA visual measurements which can be used as historical references during ground microphone pinpointing.

Sewerin Listening Device Aquaphon - When a pressurized water pipe develops a leak the water flows out into the surrounding soil at high speed, which causes the pipe material to vibrate at the exit point. This vibration, or sound, is transmitted by the pipe. This "noise" can be heard with the even at remote contact points. It may also cause the water jet and the pipe, in the vicinity of the leak, to induce vibration into the surrounding soil. This "noise" is transmitted to the surface, where it can be picked up. The Aquaphon interprets the intensity of the noise and translates it to a numeric value which is displayed on the LCD screen. The previous sounding record



"We will strategically survey each area based on terrain, pipe diameter and material."



System-Wide Leak Detection Survey

is stored for comparison to the active or next sounding record. This assists the technician in leak localization.

Subsurface Leak Detection LD-12 - The SubSurface LD-12 Water Leak Detector offers the top features in amplification and audio clarity. One of the finest sonic listening devices on the market today, the large meter display of the leak sound intensity is easily visible in all outdoor lighting, from bright sunlight to total darkness. The LD-12 includes a base plate for "ground miking" on city streets or concrete slabs and both a magnet base and a contact rod for water leak "surveying" at hydrants, valves, and meters.

Correlating Equipment

Wachs Water Services will provide specialized, advanced, sensitive electronic leak pinpointing equipment and skilled operators to effectively and efficiently perform Task 2.3 leak pinpointing. Electronic correlation equipment is one method that will be employed to pinpoint leaks. After a leak has been correlated a final audio detection will be performed to verify the leak.

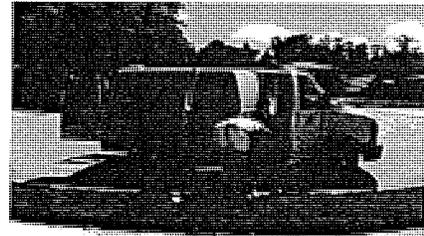
Subsurface Leak Detection LC-2500 - The SubSurface LC-2500 Leak Noise Correlator is very lightweight and compact, yet it offers full capabilities for programming and correlating leak noise from many different pipe materials and pipe diameters. Great Sensors, powerful radios and fast processing of sounds make the LC-2500 truly the best performing correlator on the market.

Sewerin Leak Correlator SeCorr -08 - The SeCorr® 08 is Sewerin's new fully digital correlator offering unprecedented performance in finding water leaks even on plastic pipes and trunk mains. The fully digital signal processing and data transmission largely eliminate the limitations experienced with conventional analogue correlators. The SeCorr® 08 can also pinpoint leaks that are outside of the sensors. This can help when system configurations due not allow the sensors to be placed on either side of the suspected leak location.

Metrotech HL6000X – PC Correlator - The correlator uses sophisticated radio technology for long range operation. The user can perform correlations on and off-site with saved data files. There are enhanced process integrations with a GPS antenna and the ability to integrate GIS software. If pipe data is unknown, the user can carry out automatic speed measurements in conjunction with the automatic filtering and multi-position correlation results to find the correct pipe data to perform correlations.

Line Locating Equipment

Line locators are a critical component of an effective leak pinpoint equipment arsenal. Correlators rely on accurate input variables and knowing exactly where the pipe is buried in the ground makes all the difference in marking an accurate leak location.





System-Wide Leak Detection Survey

Metrotech VM-810 - Metrotech, one of the original names in Pipe & Cable locating, has been producing the well tried and tested 810 for over forty years. The instrument includes a distance sensitive left/right guidance system (pioneered by Metrotech) and automatic gain adjustments to provide accurate easy locating. The VM-810 is designed as a single frequency true left/right locator which makes the unit easier to ground and minimizes user error.

Equipment Maintenance & Procurement

Our leak detection tools are maintained and stored per manufacturer specifications. That includes necessary software and hardware updates. WWS leak technicians also perform weekly operational assessments of project equipment to ensure that leak detection equipment is functioning properly. Defective equipment is sent to the manufacturer or other authorized repair facility for immediate attention. New equipment is acquired after careful evaluation of product developments and advancements enter the market. WWS requires vendors to field demonstrate the abilities of their leak detection equipment in a head to head comparison with our current leak detection tools. Acquisitions are made if the equipment can provide increased functionality, efficiency, or accuracy.

PROJECT MANAGEMENT METHODOLOGY

Our management is organized to reduce the timeframe and risks which revolve around significant system activities. Our managers understand the tasks associated with carrying-out leak survey and pinpointing services.

They understand how tasks are interconnected and what type of oversight is necessary for them to be performed expeditiously and successfully. This knowledge and understanding has been gained through successful experience working in a production environment nationwide

There is no amount of training which can replace experience when it comes to developing a solid knowledgebase. Wachs Water Services provides more experience and more qualifications, more capacity and more capabilities which amounts to more successful productivity and a LOW EFFECTIVE PRICE to the City.

The program manager will manage the startup and planning and implementation of the program. The program manager will follow the program plan, conduct pre-program discussions, develop the schedule and ensure delivering on the City's objectives. The project manager is responsible for delivering reports and official communications of all types related to the work.

"... It is this deep understanding that allows us to plan precisely the level of effort and resources required for each task and allow us to consistently meet or exceed all project requirements and scheduling objectives"





System-Wide Leak Detection Survey

Firm Capability, Expertise and Experience

PREVIOUS PUBLIC ENTITY WORK EXPERIENCE

For over seventeen years, Wachs Water Services has delivered distribution system efficiency programs and provided highly specialized services and best practices that have resulted in detailed operating procedures and field and information management processes. WWS provided the committed expertise, state-of-the-art equipment, technology and personnel to deliver world class water distribution system deliverables and benefits. Some of the clients which have received these benefits are:

- Cleveland, OH – 2-year Leak Detection Program
- PRASA, PR – 2 Year Leak Detection Program
- San Antonio, TX – 3 Year Valve Assessment Program, 3 Year Leak Detection Program
- Atlanta, GA – 3 Year Asset Management Program
- Austin, TX – 3 Year Leak Detection Program
- Baltimore, MD – 3 Year Control System Program
- DC Water, DC – 3 Year Valve Operations Program
- Fort Lauderdale, FL – 5 Year Valve Assessment Program
- Houston, TX – 4 Year Valve Operations Program
- Kansas City, MO – 5 Year Valve Operations Program

Today, Wachs Water Services uses this past experience to focus on actions to help our clients manage the ever-increasing challenge of delivering safe water.

Wachs Water Services has provided water loss prevention programs for water utilities for the better part of a decade. Wachs Water Services' leak detection technicians have surveyed thousands of miles of main across the U.S. on every known pipe material.

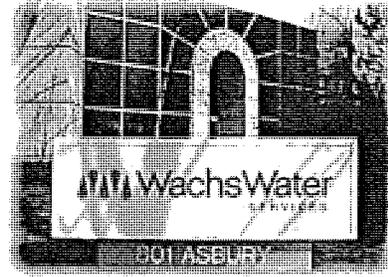
Wachs Water Services has managed many programs, large and small incorporating distribution system assessments, documentation, and water loss mitigation, programs. To date, Wachs Water Services has surveyed over 17,000 miles of main, listened for leaks on over 721,000 assets and pinpointed 6,517 leaks.

Wachs Water Services, was acquired by Pure Technologies on April 1, 2015 and amalgamated into Pure Technologies U.S. Inc. on January 1, 2016. From a capacity standpoint, Wachs is a division of a \$100MM / yr. publicly traded engineering and condition assessment technologies company Pure Technologies U.S. Inc. with approximately 500 U.S. employees and 70 field operations crews located in strategic hubs throughout North America. Wachs Water Services looks forward to bringing its financial and operational strength to bear in the City.

The following are key highlights of our team:

Experience: Pure Technologies in combination with its Wachs Water Services division has managed the leak detection and condition assessment of more than 26,000 miles of large and small diameter mains. With over 7,500 miles of Transmission main (>12-

Firm Profile



Number of Years in Business
17

Number of Communities Served
250+

Company Name
Pure Technologies US Inc.
dba Wachs Water Services

Wachs Water Services Address
801 Asbury Drive
Buffalo Grove, IL 60089

Company Telephone
1-800-525-5821

Company Contact
Wayne Pratt
Vice President of Business Development

Additional Services Offered by Wachs Water Services

- Valve and Hydrant Assessments
- Unidirectional Flushing
- Conventional Flushing
- Preplanned Construction Shutdowns
- Emergency Response Shutdowns
- Large and Critical Valve Assessments
- Valve Repairs
- Fire Hydrant Repair and Flow Testing
- Repair Prioritization Analysis
- Spatial Enhancement of GIS
- Migration of Attributes to GIS





System-Wide Leak Detection Survey

inch) and over 18,500 miles of distribution main (<12-inch), with a total of 15,121 leaks found to date. Utilizing the over 26,000 miles of leak detection data we have accumulated over the years, we have developed an exhaustive data dictionary and subsequent understanding of how the acoustic signal from a leak propagates through different sizes, pressures and materials of pipe.

Expertise: Our engineers and scientists have written national standards for leak detection and condition assessment of water mains, including the most recent edition of the AWWA M36- Water Audits and Loss Control Programs, the AWWA M77 – Manual of Practice: Condition Assessment of Water Mains, the IWA Leak Detection Technology and Implementation Manual, as well as numerous technical papers about leak detection and pipeline management. In addition, our staff are proudly involved in national committees spanning the water industry specific to water loss control and pipeline condition assessment.

Innovation: Our engineers and scientists are actively involved in research and development to provide new and innovative technologies and methods for pipeline assessment. A focus on validations of our leak detection and condition assessment technologies play a large role in our overall strategy to continuously improve upon the accuracy of our tools.

Inspection Toolbox: Pure Technologies has developed a suite of leak detection and condition assessment tools and techniques for collecting critical data on pipelines. The environments our tools operate in are pressurized, at times unfavorable and often lack redundancy. These unique operational challenges have pushed Pure Technologies' research and development efforts to refine our technology platforms to serve a wide variety of clients with varying pipe diameters, pipe materials and operational constraints. Pure Technologies offers an unparalleled suite of inline and external tools, providing a tailored approach that will implement cutting edge leak detection technologies, in order to maximize the value received from this project.

The successful execution of a leak detection study of this nature rests squarely on the selected provider's ability to meet project objectives and to meet or exceed the project schedule. Combined with data accuracy, the project's scheduling is the critical advantage in selecting Wachs Water Services, who has more experience performing leak surveys and pinpointing leaks than most firms in the U.S. It is this deep understanding that allows us to plan precisely the level of effort and resources required for each task and takes this allows us to consistently meet or exceed all project requirements and scheduling objectives.

To date, Wachs Water Services has surveyed over 17,000 miles of main, listened for leaks on over 721,000 assets and pinpointed 6,517 leaks.

Pure Technologies in combination with its Wachs Water Services division has managed the leak detection and condition assessment of more than 26,000 miles of large and small diameter mains. With over 7,500 miles of Transmission main (>12-inch) and over 18,500 miles of distribution main (<12-inch), with a total of 15,121 leaks found to date.





System-Wide Leak Detection Survey

CONTROLLING COSTS AND MANAGING TIMELINES

Our key people have been working together in many other utilities performing all aspects of this scope of work. The result is clear lines of communication and responsibility.

WWS teams have many years of experience bringing programs to their successful conclusion; this increases the expected productivity in the City because higher productivity and higher quality is equivalent to Lower Effective Prices. WWS has developed a management philosophy built on the institution of professional management practices and implemented them company wide. WWS project managers understand how earned value is tracked and what actions need to be taken when variances are observed in any given task. The result is projects that are delivered on time and on budget.

*"Wachs Water Services
maintains a team of
highly qualified and
experienced personnel."*





Experience of Key Personnel

Wachs Water Services ("WWS") maintains a team of highly qualified and experienced personnel in many different parts of the country. Our leak service crews are highly trained professionals with the expertise necessary to deliver your program objectives. We utilize state-of-the-art analog and digital leak detection equipment to identify pinpoint, measure and reduce water losses. Wachs Water Services has the deep experience and qualifications needed to make the City's Program a resounding success. Below is information on our Project Manager and Technicians. Personnel will be made available to support the City's Program as needed.

Doug Nail, PMP, Project Manager (resume attached)

Doug Nail is a Project Manager and Training Specialist for Wachs Water Services who resides in Clarksville, TN and has been with WWS since June of 2004. Mr. Nail has extensive experience in the execution of leak detection and assessment programs. Mr. Nail has managed a variety of program types for Wachs Water Services including, Valve Condition Assessments, Hydrant Assessments and Leak Detection. Mr. Nail has delivered over 26 Operations Training Classes for Wachs Water Services and has qualified over 175 Crew Chiefs, Operators and Supervisors since October of 2007 and has also conducted training for several clients.

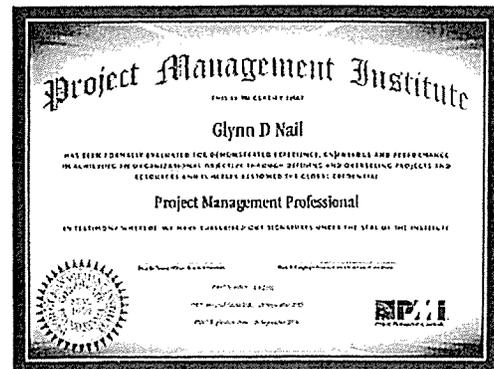
Mr. Nail has extensive project management experience and is an expert in the use and maintenance of valve and fire hydrant operating equipment and leak detection procedures and processes and he uses his expertise to train Wachs Water Services field personnel on all field procedures and he has managed numerous assessment programs including the current program with KCMO.

Professional registrations, education, certifications, and credentials: 30 Hour OSHA Training Certification, OSHA 510 Certification, Field Operations Classroom Trained, Wachs Water Services Certified Operator, Crew Chief and Project Manager, Truck Safety, Equipment and Inspection Training, Trimble Operation and Data Management Training, First Aid/CPR Certification, Confined Space Entry Trained

Jose Rose, Leak Detection Technician (resume attached)

Since joining Wachs Water Services Jose has worked on many leak detection projects in municipalities across the country including, PRASA, SAWS, Baltimore, MD and Hays, KS. Jose is experienced with the successful delivery of our leak detection and, valve and hydrant programs to utilities nationwide. As a lead leak detection technician, Jose performs leak detection investigations, water sampling, water audits, pressure checks, and troubleshoots customer water complaints. Jose is trained in all Wachs Water Services leak detection processes, equipment, and techniques. Jose has trained leak detection operators on listening/ survey equipment, correlators, and digital loggers. He has excellent interpersonal skills and can

"Wachs Water Services maintains a staff of numerous qualified Leak Detection Technicians. This position requires successful completion of an intense 1-week classroom based training program 3+ years of experience working in water distribution systems and a minimum of 1 year full-time leak detection experience."





System-Wide Leak Detection Survey

communicate effectively with residents and customers as to the nature and causes of their water leak issues.

Training & Certifications: OSHA ten (10) Hour, Field Operations Classroom Trained, Wachs Water Services Certified Operator and Crew Chief, Truck Safety, Equipment and Inspection Training, Trimble Operation and Data Management Training, First Aid/CPR Certification, Confined Space Entry Trained, Flagger Certification, Hydrant Flushing/Flow Trained (AWWA M17, NFFPA 291, Wachs Water Services Water Audit / Leak Detection Certified Technician.

Tavon Ellis, Web Developer (resume attached)

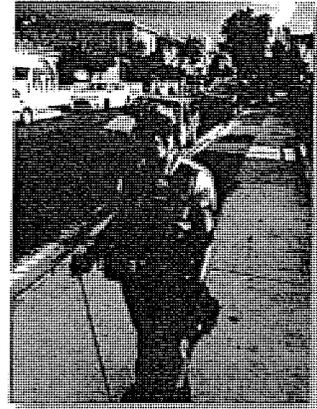
Tavon Ellis will develop the secure web based application for this program. Mr. Ellis has programming experience in Java, Action Script, HTML, SQL and Visual Basic. He has application building experience with Visual Studio, Adobe Flash Builder and SQL Reporting Services and he has experience with ArcGIS Server, web development and SQL database development. Tavon has extensive experience in designing, and maintaining databases. He has experience creating tables, views, functions, stored procedures and creating SQL reports. He has experience installing, configuring IIS and web application development. Tavon creates linkages of systems and system components to enhance productivity and effectiveness.

Trainings & Certifications: Oracle Certified DBA: Associate/Professional
GIS/GPS and Mapping Software: Microsoft SQL Server, Oracle PL/SQL, Adobe Photoshop, Macromedia Suite, Microsoft.Net, Javascript, HTML, C#, Asp.Net, Visual Basic, ArcSDE,
Business Software: Microsoft Word, Access, Excel, PowerPoint

Samuel Hildebrand, Information Analyst (resume attached)

Samuel Hildebrand is an Information Analyst for Wachs Water Services. He has over ten years of practical experience with GIS. Samuel has experience in collecting spatial data and integrating it into a Municipal GIS. He has used his knowledge of GIS on a wide range of projects including the mapping of water distribution and real estate. Samuel has gained his GIS experience by working on a very diverse range of projects. He collected and maintained utility GIS data while working for public entities. In addition to driving the information management aspects of numerous valve and hydrant programs, Samuel also has field experience in troubleshooting system discrepancies, operating valves and fire hydrants, and continually assists all field personnel with access to accurate, current system data.

Education, Training & Certifications: B.S., University of Wisconsin-La Crosse;
Esri Trimble Certified Training for GPS Mapping for GIS with Terrasync & Pathfinder Office GIS/GPS and Mapping Software: ArcGIS 10.x, Arcview 3.x, ArcGIS Server, ArcSDE, AutoCAD Map, Arc Info, ArcPad, ERDAS Imagine, Visio, SQL Developer, Visual Studio Web Developer Express, Adobe Flex



"The Wachs staff took the time to show the Directors the entire process, answered all their questions, and allowed them to listen to lines with no leaks and ones with leaks so they could hear the difference. The Directors were impressed."

*- Ed Winton,
PAWSD*





System-Wide Leak Detection Survey

Builder, (x)html, css, Microsoft QBASIC, Visual Basic, CoralDraw12, MapInfo, Pathfinder Office, GraniteNet, Trimble GeoXH uni

NOTE: Wachs Water Services reserves the right to utilize additional or other qualified staff to provide the services offered within this proposal, and may at any time allocate other resources, as is necessary.

PROJECT ROLES

Program Oversight

The principle-in-charge will ensure that the appropriate resources are provided to the Program from equipment to people and facilities. They are intimately involved with development of the project budget and schedule; they meet with the project manager and attend monthly update meetings via conference call and in person. They are responsible to the client for ensuring that the program is successfully completed.

Project Manager

The project manager will manage the startup and planning and implementation of the project. The project manager will follow the project plan, conduct pre-program discussions, develop the schedule and ensure delivering on the City's objectives. The project manager is responsible for delivering reports and official communications of all types related to the work.

Leak Detection Technicians

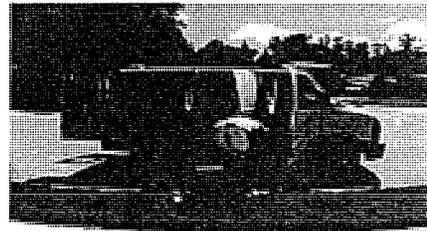
Wachs Water Services maintains a staff of numerous qualified Leak Detection Technicians. This position requires successful completion of an intense 1-week classroom based training program 3+ years of experience working in water distribution systems and a minimum of 1 year full-time leak detection experience. In addition, all Leak Detection Technicians are required to hold an OSHA 10 card and undergo and pass an annual hearing test. The Leak Detection technicians execute the surveys, correlate leaks and capture the required data.

Web Developer Role

The Web Developer will configure ProjectTracker™ to support the specific business needs of this project. The Web Developer will make all program information usable, accurate, and available to those who need it.

QC Analyst

The primary role of the QC Analyst will be to perform database quality control tasks. We anticipate many hundreds of records being captured in the field each work day and this resource will execute a series of semi-automated quality control measures to ensure the right information is being published and delivered to the client. This resource will also support monthly and annual reporting as well as scope completion validation.





References and Examples of Leak Detection Projects

Wachs Water Services is the industry leader in leak detection program experience with clients across the nation. Our experience on similar sized projects, such as Temple, TX and Des Plaines, IL along with some of our larger projects such as PRASA (5,000 miles), Cleveland (2,500) and Austin (2,800 miles), illustrate our qualifications. These projects have led to the development of workflow, supporting tools and best practices that will lead to successful leak detection, data management, quality control and reporting. Wachs Water Services offers an approach tools and resources that are unmatched in the industry and are ready to be implemented in the City.

City of Cleveland, OH

Wachs Water Services has performed leak detection services For the City of Cleveland water division since 2015. This two-year program surveys half of the City of Cleveland distribution system (2,500 miles) and utilizes a mixture of acoustic methods to find and pinpoint leaks as appropriate to each circumstance. Wachs Water Services utilizes Project Tracker for this project, giving the City access to real time data, enabling them to track the progress of the project whenever they desire. Leak reports are available to them at any time. This program is 99% complete.

City of Minneapolis, MN

Wachs Water Services recently conducted a leak detection survey on 874 miles of pipe which were predominantly metallic. In addition, 2,630 water valve manholes were inspected, high accuracy GPS collected, and valuable asset data delivered to the City. WWS utilized Project Tracker for this project, giving the City access to real time data, enabling them to track the progress of the project whenever they desired. Leak reports were also available to them at any time. A total of 31 leaks were confirmed, which is equivalent to approximately 1 leak every 28.2 miles, or 365 GPM (estimated) in potential savings. WWS also detected 20 mapping defects and approximately 1124 asset defects.

Puerto Rico Aqueduct & Sewer Authority (PRASA)

Wachs Water Services was contracted to perform 5,000 miles of leak detection for PRASA in late 2013. At the conclusion of this program, we completed over 5,000 miles of leak detection and pinpointed over 2,500 leaks with an estimated loss of 7,307 GPM. Our crews also performed many on-call leak detection investigations for PRASA as part of this program. The PRASA water distribution system consists of a variety of known pipe materials throughout that include PVC, DIP, CIP, Steel and PCCP. There are also areas in the PRASA system where there is no existing data on pipes and our crews with their extensive experience and training have been able to

Wachs Water Services ability to successfully manage and carryout the scope of this program and work effectively with the City of Oak Ridge rests squarely on experience having performed condition assessment and leak detection projects for public and private utilities, locally and nationally including:

- Knoxville, TN
- Clarksville, TN
- Aqua, IL
- Springfield, IL
- Decatur, IL
- Atlanta, GA
- Gwinnett County, GA
- East Point, GA
- St. Louis, MO
- Kansas City, KS
- Kansas City, MO
- DC Water, DC
- WSSC, DC
- Houston, TX
- Phaenix, TX
- Howard County, MD
- Fort Lauderdale, FL
- Pensacola, FL
- Wilmington, DE
- Charlotte, NC
- Raleigh, NC
- Calumbus, OH
- Tampa, FL
- Austin, TX
- San Antonio, TX
- Hollywood, FL
- Golden State, CA
- Springfield, MA
- Baltimore, MD
- Camden, NJ
- Orlando, FL
- Winston Salem, NC
- American Water
- United Water
-and many others





System-Wide Leak Detection Survey

interpret leak sounds and manipulate the leak detection equipment to pinpoint leaks.

Temple, TX

In 2015 Wachs Water Services was awarded a multi-year leak detection contract with the City of Temple, TX. A total of 230 miles of water mains was included in the leak survey and 10,675 acoustic soundings were performed. As a result, 72 leaks were documented and 549 asset defects were documented and 484 mapping discrepancies were found. All findings were compiled into a database. The leaks were pinpointed to within 3 feet using a combination of a leak noise correlator and a ground microphone. After the leaks were pinpointed a leak report was generated to document the location and any other key characteristics which would assist in the prioritization of repairs.

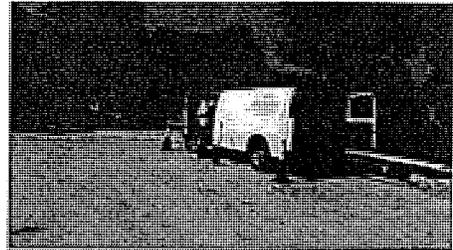
Des Plaines, IL

Wachs Water Services completed a 110-mile leak detection program for the City of Des Plaines in 2015. Of the 110 miles surveyed, WWS identified 4 leaks and a total leakage of 52 GPM or 27,331,200 gallons per year.

Kansas City, KS

WWS is currently working on its second multi-year Asset Assessment and Repair contract for Kansas City BPU to perform asset location, operational condition assessment, GPS location mapping and repair services for valves and in the Kansas City water distribution system. This program also includes leak sounding which has been extremely successful in assisting recommending areas to focus leak detection efforts.

“Wachs Water Services has the deep experience and qualifications needed to make the City of Oak Ridge Program a resounding success.”





System-Wide Leak Detection Survey

References

Utility Name and Location	Project Name	Contact Information	Time Period	Miles Surveyed	Acoustic Soundings Documented	Leaks Documented	Asset Defects Documented	Mapping Descriptions Found	Total Leakage (GPM)
City of Cleveland Cleveland, OH	Leak Detection Program	Alex Margevicius, Assistant Commissioner 1201 Lakeside Ave., Cleveland, OH alex_margevicius@clevelandwater.com 216-684-2444	2015-2017	2,500	34,468	426	1370	678	2803
City of Minneapolis Minneapolis, MN	Leak Detection Program	Bill Dougherty, City Planner 935 5th Ave., SE Minneapolis, MN 55414 William.dougherty@minneapolismn.gov (612) 673-5600	2015	2,630	8,892	31	1,124	20	365
Puerto Rico Aqueduct & Sewer Authority (PRASA) Melbourne, FL	Leak Detection Program	Mauricio Olaya, Director of Planning P.O. Box 7066 San Juan, PR 00916-7066 mauricio.olaya@aoeductospr.com (787) 999-1717, Ext. 239	2013-2015	5,000	195,000	2,601	10,186	12,039	11,981
City of Temple Temple, TX	Leak Detection Program	Chris Peal, Public Works Mapping & Technology Manager 3210 E Ave., H Bldg., A Ste 123 Temple, TX 76501 cpeal@templetx.gov (254) 298-5479	2015	230	10,675	72	549	484	360
City of Des Plaines Des Plaines, IL	Leak Detection Program	Michael Schmidt, Water Foreman 1111 Joseph Schwab Rd. Des Plaines, IL 60016 mschmid@desplaines.org (847) 391-5463	2015	110	2,415	4	328	68	52
Kansas City Board of Public Utilities (KCBPU)	Valve and Hydrant Assessment with Leak Sounding Program	Steve Green, Director of Water Distribution 380 S. 11th St., Kansas City, KS 66102 (913) 573-9630 sgreen@bpu.com	2012-Present	N/A	11,496	N/A	27,570	7,111	N/A

Proposal Forms

Following are the completed proposal forms from the RFP, including;

- Proposal Summary Sheet
- References



FORMS

PROPOSAL SUMMARY SHEET

System-Wide Leak Detection Survey

IN WITNESS WHEREOF, the parties hereto have executed this proposal as of the date shown below.

Organization Name: Pure Technologies US Inc/dba Wachs Water Services

Street Address: 8920 State Route 108 Suite D

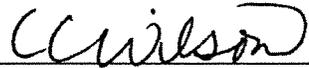
City, State, Zip: Columbia, MD 21045

Contact Name: Brad Gresham

Phone: 678-340-6850 Fax: 443-766-7877

E-Mail address: bgresham@wachsws.com

FEIN#: 86-0853190

Signature of Authorized Signee: 

Title: President

Date: 9/2/2017

ACCEPTANCE: This proposal is valid for 90 calendar days from the date of submittal.
(Note: At least 60 days should be allowed for evaluation and approval)

BUSINESS ORGANIZATION:

_____ Sole Proprietor: An individual whose signature is affixed to this proposal.

_____ Partnership: Attach sheet and state full names, titles, and address of all responsible principals and/or partners. Provide percentage of ownership and a copy of partnership agreement.

X Corporation: Provide a disclosure of all officers and principals by name and business address, date of incorporation, and indicate if the corporation is authorized to do business in Tennessee. State of incorporation: Delaware.

In submitting this proposal, it is understood that the City of Oak Ridge reserves the right to reject any or all proposals, to accept an alternate proposal, and to waive any informalities in any proposal.

In compliance with your Request for Proposals, and subject to all conditions thereof, the undersigned offers and agrees to furnish the services as outlined if this proposal is accepted.

Wachs Water Services
Business Name

(Corporate Seal)

Cliff Wilson
Signature

Cliff Wilson
Print or type name

President
Title

9/2/2017
Date

REFERENCES

(Please Print or Type)

ORGANIZATION City of Cleveland, OH

ADDRESS 1201 Lakeside Ave.

CITY, STATE, ZIP Cleveland, OH 44114

PHONE NUMBER 216-664-2444

CONTACT PERSON Alex Margevicius

DATE OF PROJECT 2015 - 2017

ORGANIZATION City of Minneapolis, MN

ADDRESS 935 5th Ave., SE

CITY, STATE, ZIP Minneapolis, MN 55414

PHONE NUMBER 612-673-5600

CONTACT PERSON Bill Dougherty

DATE OF PROJECT 2015

ORGANIZATION Puerto Rico Aqueduct & Sewer Authority (PRASA)

ADDRESS PO Box 7066

CITY, STATE, ZIP San Juan, PR 00916-7066

PHONE NUMBER 787-9999-1717 ext. 239

CONTACT PERSON Mauricio Olaya

DATE OF PROJECT 2013 - 2015

Proposer's Name & Title: Cliff Wilson, President

Signature and Date: 

STAFF RESUMES

Doug Nail, PMP, Project Manager

Professional Summary

Doug Nail (PMP) is a Project Manager for Wachs Water Services with 12 years of professional experience in the water industry. Doug has extensive experience in the execution of valve and hydrant assessment programs and has supervised field personnel on numerous programs for Wachs Water Services. Doug is currently the Project Manager of multiple projects in the Midwest United States. Since 2004, Doug has managed a variety of program types for Wachs Water Services including, Valve Assessments, Hydrant Assessments and Leak Detection. Prior to managing projects, Doug worked as a Field Technician from 2004-2007 before becoming the Corporate Trainer mid-2007. As Trainer he instructed 26 Operations Training Classes for Wachs Water Services and trained a total of 175 individuals. During this time he also obtained his PMP from PMI and many other certificates. Doug served as the Corporate Trainer until late 2011 when his role was changed to Project Manager.

Experience

Management and Training Experience

Doug has extensive program management experience. Doug is an expert in the use and maintenance of valve and fire hydrant operating equipment and valve operating procedures and processes. Doug uses his expertise to monitor and control scope, schedule, and budget for all of his assigned projects. He also maintains great relationships with MBE/WBE firms that work on his projects. Doug also continues to provide company training on occasions.

Valve and Hydrant Assessment Experience

Doug has inspected, audited and exercised thousands of valves from 1" ball valves to large gate, butterfly and cone valves. He is an expert at valve operating equipment, valve operators, torque limits on specific valves and the operating characteristics of all valve types. Doug has specific expertise in operating large and high torque valves. Doug is also well versed in single hydrant and M17 flow testing.

Valve and Hydrant Repair Experience

Doug has extensive experience in the repair of different types of valves and structures. He has repaired butterfly shear pins; butterfly operators, external geared gate valves, replaced packing; and straightened misaligned roadway boxes. He also has experience replacing frames and covers on vaults, rising paved over valves and troubleshooting valve repair activities. Doug has also performed maintenance on many different manufacturers' hydrants from minor repairs to raises, and major rebuilds.

Project List

St. Louis, MO – Valve Assessment and Repair Program
Clarksville, TN – Valve & Hydrant Assessment and Leak Detection Program
Nashville, TN – Leak Detection Program
Mohawk Valley, NY – Valve Assessment Pilot
Knoxville, TN – Valve & Hydrant Assessment and Repair Program
Austin, TX – Leak Detection Program
Kansas City, MO - Valve & Hydrant Assessment and Repair Program
Kansas City, KS - Valve & Hydrant Assessment Program
Montrose, CO – Valve Assessment Program
Olathe, KS – Large Valve Assessment Program
City of St. Louis – Valve Assessment Program

Atlanta, GA – Valve and Hydrant Assessment Program (Training Specialist)
Baltimore, Maryland – Valve and Hydrant Assessment Program (Training Specialist)
Washington, DC (DCWASA) – Valve and Hydrant Program (Training Specialist)
Columbus, OH – Hydrant Repair Program (Field Technician)
Mohawk Valley, NY – Valve Assessment Pilot Program (Field Technician/Assistant PM)
Batavia, IL – Valve Assessment Program (Field Technician)
Pompano Beach, FL – Hydrant Capacity Testing Program (Training Specialist)
Melbourne, FL – Unidirectional Flushing Program (Training Specialist)
Austin, TX – Hydrant Assessment Program (Training Specialist)
Salisbury, MD - Delmar, MD - Franklin, TN – American Darling Upper Stem Replacement Program (Field Technician)
Ft. Lauderdale, FL – Valve Assessment Program (Training Specialist)
Oxnard, CA – Valve and Hydrant Program (Training Specialist)
Houston, TX – Large Valve Assessment Program (Training Specialist)

Certifications/Registrations

Wachs Certified Trainer
Wachs Certified Project Manager
Wachs Certified Operator and Crew Chief
Truck Safety, Equipment and Inspection Training
DOT Compliant
Trimble Operation and Data Management Training
10 Hour OSHA Training Certification
30 Hour OSHA Training Certification
OSHA 510 Certification
Traffic Control Supervisor Certification (ATSSA)
ATSSA Flagger Certification
First Aid/CPR Certified
Field Operations Classroom Trained
Confined Space Entry Trained
Hydrant Flushing/Flow Test Training
Held Water Operator Certifications in AZ, GA, MA and PA

Jose Rose, Assistant Project Manager

Professional Summary

Jose Rose is an Assistant Project Manager for Wachs Water Services with over ten years of professional experience in the water industry. Mr. Rose has extensive experience in the execution of distribution efficiency programs for Wachs Water Services, and has over 9 years of leak detection experience. Mr. Rose has managed crews for a variety of service types including leak detection, water quality audits, valve exercising and fire hydrant testing.

Leak Detection Experience

Mr. Rose is an expert at the use of leak detection survey equipment and electronic correlating equipment. Conceptual skills, coupled with leak detection training and field experience provide for the skills, knowledge and expertise to evaluate and pinpoint leaking assets, documents findings and make recommendations for rehabilitation. Mr. Rose has strong strategic leak detection planning, execution and training skills and has personally performed leak detection on over 5,000 miles of main. Mr. Rose worked on Water Infrastructure Condition Assessment projects in Baltimore performing leak detection, documenting water assets and structures, and identifying water mapping discrepancies.

Project List

PRASA – Leak Detection Program
Pagosa Area Water, CO – Leak Detection Program
Erie, CO – Leak Detection Program
San Antonio Water Systems (SAWS), TX – Leak Detection Program
Hays, KS – Leak Detection Program
GA Environmental Financial Authority - Multi-Community Leak Detection Program
Jaffrey, NH – Leak Detection Program
Amherst, VA – Leak Detection Program
Berkley Springs, WV – Leak Detection Program
Baltimore, MD – Water Audit/ Leak Detection Program
Baltimore, MD – Valve and Hydrant Program (Mr. Rose currently handles and resolves customer water leak service requests for this program)

Certifications/Registrations

OSHA 10 Hour
Field Operations Classroom Trained
Wachs Certified Operator, Crew Chief
Truck Safety, Equipment and Inspection Training
Trimble Operation and Data Management Training
First Aid/CPR Certification
Confined Space Entry Trained
Flagger Certification
Hydrant Flushing/ Flow Trained (AWWA M17, NFPA 291)
Wachs Water Audit / Leak Detection Certified Technician.
Flagger Certification
Hydrant Flushing/ Flow Trained (AWWA M17, NFPA 291)
Wachs Water Audit / Leak Detection Certified Technician

Tavon Ellis, Information Analyst/Developer

Professional Summary

Tavon Ellis is an Information Analyst for Wachs Water Services. He has over twelve years of practical experience with GIS. Tavon has programming experience in Java, Action Script, HTML, SQL and Visual Basic. He has application building experience with Visual Studio, Adobe Flash Builder and SQL Reporting Services. He has experience with ArcGIS Server, web development and SQL database development.

Experience

GIS Experience

Tavon has a proven track record of applying GIS technologies to increase operational effectiveness, validate data, and validate GPS positions in order to improve valve and hydrant data available to distribution operations and engineers in numerous municipal utilities. Tavon has extensive training in key geographic information systems. He continually networks with systems professionals to keep up to date on new system developments and applications.

Systems Integration Experience and Process Development

Tavon has extensive experience in designing, and maintaining databases. He has experience creating tables, views, functions, stored procedures and creating SQL reports. He has experience installing, configuring IIS and web application development. Tavon creates linkages of systems and system components to enhance productivity and effectiveness. He is an expert at developing and maintaining data and information management processes and procedures. Tavon is adept at multi-tasking and maintaining the big picture while also ensuring that the details are executed professionally.

GPS Experience

Tavon has in-depth knowledge of GPS technologies utilized to collect and store utility asset data with the highest confidence. He is an expert in industry available GPS technologies and how these new technologies can be used to increase efficiencies and effectiveness. Tavon is an expert at validating GPS positions using GIS to ensure accuracy.

Project List

Cleveland, OH – Leak Detection Program
PRASA, PR – Leak Detection Program
GEFA, GA – Leak Detection Program
Baltimore, Maryland – Valve Assessment and Hydrant Maintenance and Repair Program
Washington Suburban Sanitary Commission, Maryland – Valve Assessment Program
DC Water, District of Columbia – Valve Assessment and Hydrant Flow Testing Program
Atlanta, Georgia – Valve Assessment Program
Houston, Texas – Valve Assessment Program
Kansas City, Missouri – Valve Assessment and Hydrant Flow Testing Program
Henrico, Virginia – Valve Assessment Program
Knoxville, Tennessee – Valve Assessment Program
Macon, Georgia – Valve Assessment Program
KUB – Valve Assessment Program
Austin, Texas – Leak Detection Program

Samuel Hildebrand, Information Analyst

Professional Summary

Samuel Hildebrand is an Information Analyst for Wachs Water Services. He has over ten years of practical experience with GIS. Samuel has experience in collecting spatial data and integrating it into a Municipal GIS. He has used his knowledge of GIS on a wide range of projects including the mapping of water distribution and real estate.

Education

B.S. Geography, GIS Concentration, University of Wisconsin, La Crosse

Experience

GIS Experience

Samuel has a proven track record of applying GIS technologies to increase operational effectiveness, validate data, and validate GPS positions in order to improve valve and hydrant data available to distribution operations and engineers in numerous municipal utilities. Samuel has extensive training in key geographic information systems. He continually networks with systems professionals to keep up to date on new system developments and applications.

Systems Integration Experience and Process Development

Samuel has extensive experience in utilizing the Microsoft Office Suite and ArcGIS software to effectively compile, store, analyze, and distribute information. Samuel creates linkages of systems and system components to enhance productivity and effectiveness. He is an expert at developing and maintaining data and information management processes and procedures. Samuel is adept at multi-tasking and maintaining the big picture while also ensuring that the details are executed professionally.

GPS Experience

Samuel has in-depth knowledge of GPS technologies utilized to collect and store utility asset data with the highest confidence. He is an expert in industry available GPS technologies and how these new technologies can be used to increase efficiencies and effectiveness. Samuel is an expert at validating GPS positions using GIS to ensure accuracy.

Water Distribution Systems Experience

Importantly, and in addition to driving the information management aspects of numerous valve and hydrant programs, Samuel also has field experience in troubleshooting system discrepancies, operating valves and fire hydrants, and continually assists all field personnel with access to accurate, current system data.

Training & Certifications

Oracle Certified DBA: Associate/Professional

GIS/GPS and Mapping Software: Microsoft SQL Server, Oracle PL/SQL, Adobe Photoshop, Macromedia Suite, Microsoft.Net, Javascript, HTML, C#, Asp.Net, Visual Basic, ArcSDE

Business Software: Microsoft Word, Access, Excel, PowerPoint

Education

B.S. Information Systems, University of Maryland – Baltimore County, Certificate in Web Development, University of Maryland, A.A., General Studies, Community College of Baltimore County

Project List

Cleveland, Ohio – Leak Detection Program
Toho Water Authority, Florida – Large Valve Assessment Program
Kansas City, Kansas – Valve and Hydrant Assessment Program
California American Water (Monterrey, CA) – Valve Assessment Program
Corona, California – Valve and Hydrant Assessment Program
Gillette, Wyoming – Valve Assessment Program
Goodyear, Arizona – Valve Assessment Program
Scottsdale, Arizona – Large Valve Assessment Program
San Antonio, Texas – Leak Detection Program
San Antonio, Texas – Valve Assessment Program
Temple, Texas – Sewer and Storm Water Assessment Program
Kansas City, MO – Valve and Hydrant
Celina, Texas – Sewer Water
Fort Totten, NY – Sewer and Storm Water

Training and Certifications

ESRI Trimble Certified Training for GPS Mapping for GIS with Terrasync & Pathfinder Office

GIS/GPS and Mapping Software: ArcGIS 10.x, Arcview 3.x, ArcGIS Server, ArcSDE, AutoCAD Map, Arc Info, ArcPad, ERDAS Imagine, Visio, SQL Developer, Visual Studio Web Developer Express, Adobe Flex Builder, (x)html, css, Microsoft QBASIC, Visual Basic, CoralDraw12, MapInfo, Pathfinder Office, GraniteNet, Trimble GeoXH units

Business Software: Microsoft Word, Access, Excel, PowerPoint

Project Budget
City of Oak Ridge, Tennessee Leak Detection Services

TASK	Units Miles	Units Hours	Units Leaks	Rate/unit	TOTAL
Program Planning					
Implement Project Tracker		20		\$ 80	\$ 1,600
Overlay leak detection approaches		5		\$ 80	\$ 400
Document work schedule		10		\$ 95	\$ 950
Mobilization					
mobilization		16		\$ 200	\$ 3,200
Project kickoff					
Project kickoff meeting		2		\$ 95	\$ 190
Leak Survey and Resulting Correlations					
Valve, Hydrant & Appurtanance leak survey	289.75			\$ 295	\$ 85,476
Ground Mike leak survey - PVC	15.25			\$ 450	\$ 6,863
Data capture and reporting					
structured incremental reporting		20		\$ 95	\$ 1,900
recommendations		10		\$ 95	\$ 950
final report		20		\$ 95	\$ 1,900
TOTALS					\$ 103,429

RESOLUTION

A RESOLUTION APPROVING A PROFESSIONAL SERVICES AGREEMENT WITH WACHSWATER SERVICES, BUFFALO GROVE, ILLINOIS, FOR A SYSTEM-WIDE WATER LEAK DETECTION SURVEY IN THE ESTIMATED AMOUNT OF \$103,429.00.

WHEREAS, the City is in need of professional services to conduct a system-wide water leak detection survey; and

WHEREAS, a Request for Proposals was issued with eight (8) proposals received, which were evaluated by a four-person panel; and

WHEREAS, the panel selected WachsWater Services, Buffalo Grove, Illinois, as the best company to provide this service; and

WHEREAS, the City Manager recommends approval of an agreement with WachsWater Services for these services.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE:

That the recommendation of the City Manager is approved and the City is hereby authorized to enter into a professional services agreement with WachsWater Services, Buffalo Grove, Illinois, to conduct a system-wide water leak detection survey; said agreement in the estimated amount of \$103,429.00.

BE IT FURTHER RESOLVED that the Mayor is hereby authorized to execute the appropriate legal instruments to accomplish the same.

This the 9th day of October 2017

APPROVED AS TO FORM AND LEGALITY:



Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

CITY COUNCIL MEMORANDUM
17-35

DATE: October 2, 2017
TO: Honorable Mayor and Members of City Council
FROM: Mark S. Watson, City Manager
SUBJECT: STUDIO FOUR DESIGN CONTRACTS

Introduction:

An item for City Council's consideration is a resolution authorizing agreements with Studio Four Design, Inc., Knoxville, Tennessee, for architectural, interior design, and consulting engineering services for (1) the new Preschool building in the estimated amount of \$574,700.00 and (2) the new Senior Center Building in the estimated amount of \$196,630.00.

Financial:

These projects will be supported by bond funding presently being considered and approved by the City Council. Allocation in the bond is \$1,000,000 for these services and other initial costs related to these two projects.

Background:

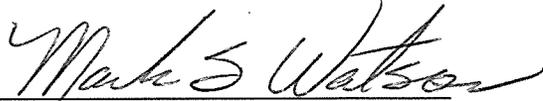
By Resoluton No. 9-67-2016 the City Council authorized a professional services agreement with Studio Four Design, Inc., Knoxville, Tennessee to provide architectural services for various projects, two of those projects being the new preschool building and the new senior center building.

During this past year, commitment has been made by the City Council to proceed through a process that has identified the development of a new Preschool building to replace the current building located on New York Avenue, which is now 75 years old and has reached its maximum life span. The City has studied and decided on a location in the area across from the Scarboro Community Center. Five public meetings were held with the neighborhood as conceptual plans were developed for the project. Input has been received from neighborhood residents and Oak Ridge School users. Details for the preschool are finalized for conceptual design and approximate budgets. Approval of the agreement will allow our architect, Studio Four Design, to begin construction plans while continuing to evaluate ways to contain costs and achieve best value.

The second agreement is the design of construction plans for a new Senior Center. While working with members of the Senior Advisory Board, the site and conceptual designs have been selected for a location at Bissell Park just west of the Oak Ridge Civic Center. This separate facility will provide meeting space, recreational space, and outdoor access to adjacent green space in the park. A new senior center was a matter discussed by City Council in 2009. In 2016, the Senior Center was temporarily relocated to the Civic Center. Various studies were conducted while the seniors were located at the Daniel Arthur Rehabilitation Center (DARC) by agreement with Anderson County. DARC will now be the home of the Anderson County Sessions Court, thus tasking the City to find other options closer to the center of town. Approval of the agreement with Studio Four will allow construction designs to begin and move the seniors closer to new facilities.

Recommendation:

Approval of the attached resolution is recommended.


Mark S. Watson

Attachment: Resolution

RESOLUTION

A RESOLUTION TO AUTHORIZE AGREEMENTS WITH STUDIO FOUR DESIGN, INC., KNOXVILLE, TENNESSEE, FOR ARCHITECTURAL, INTERIOR DESIGN, AND CONSULTING ENGINEERING SERVICES FOR (1) THE NEW PRESCHOOL BUILDING IN THE ESTIMATED AMOUNT OF \$574,700.00 AND (2) THE NEW SENIOR CENTER BUILDING IN THE ESTIMATED AMOUNT OF \$196,630.00.

WHEREAS, by Resolution 9-67-2016, City Council authorized a professional services agreement with Studio Four Design, Inc., Knoxville, Tennessee, to provide architectural services for various projects, two of those projects being the new preschool building and the new senior center building; and

WHEREAS, Studio Four has prepared preliminary designs of the two buildings and has participated in various public input meetings for both projects; and

WHEREAS, the City is now ready to move forward with architecture, interior design, and consulting engineering services for civil, landscape architecture, structural, mechanical, plumbing, and electrical engineering, including a cost estimating consultant, for both projects; and

WHEREAS, the City Manager recommends approval of agreements with Studio Four for these services.

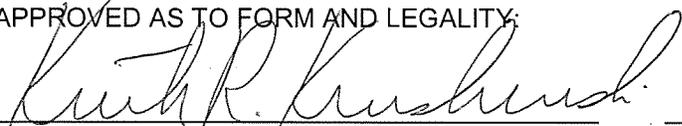
NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF OAK RIDGE, TENNESSEE:

That the recommendation of the City Manager is approved and the City is hereby authorized to enter into agreements with Studio Four Design, Inc., Knoxville, Tennessee, in the estimated amounts of \$547,700.00 and \$196,630.00 for architecture, interior design, and consulting engineering services for civil, landscape architecture, structural, mechanical, plumbing, and electrical engineering, including a cost estimating consultant, for the preschool and senior center buildings, respectively.

BE IT FURTHER RESOLVED that the Mayor is hereby authorized to execute the appropriate legal instruments to accomplish the same.

This the 9th day of October 2017.

APPROVED AS TO FORM AND LEGALITY:



Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Mary Beth Hickman, City Clerk

FINANCE DEPARTMENT MEMORANDUM

17-18

DATE: October 2, 2017
TO: Mark S. Watson, City Manager
FROM: Janice E. McGinnis, Finance Director
SUBJECT: DEBT RESOLUTION

Introduction

An item for City Council's consideration is the adoption of a bond resolution for the issuance of not to exceed \$21,350,000 in General Obligation Bonds. The current size of the proposed debt issuance is \$21,215,000 and includes \$6,920,000 in bond proceeds to refund the Electric Fund portion of the 2009 Bonds and \$14,295,000 in new bond proceeds for ESCO projects, software, radio system replacement and new Preschool and Senior Center initial costs.

Analysis

The estimated amount of the debt components included in the bond resolution are as outlined below. Estimated debt amortization projections as of September 25, 2017 are attached.

Refunding of the Electric Fund portion of the 2009 Bonds - \$6,920,000 – This refunds the outstanding 2020 to 2025 Electric Fund bond maturities of the 2009 Series Refunding Bonds. This refunding extends the debt back to 2030, which was the debt term when issued as part of the 2001 TN-Loans. The restoration of the debt to its prior term through 2030 provides additional funding capacity for planned capital projects, which includes the new utility billing and accounting software debt listed below. A refunding in today's low interest rate environment also has an estimated gross savings of approximately \$111,015 and a net present value of approximately \$391,250 or 5.6% of the refunded principal. In summary, the refunding provides capacity for the City to finance new capital projects that will provide better and more efficient service to our electric rate payers with minimal impact to utility rates. The General portion of the 2009 Series Bonds could not be refunded at this time due to a prior advance refunding of a portion of those bonds.

ESCO Projects - \$5,870,000 – The ESCO projects to be completed in this phase total \$8,788,149, comprised of \$6,171,768 in School projects and \$2,616,381 in City projects. \$3,000,000 of the School projects will be funded by a 12-year Energy Efficient School Initiative loan with anticipated annual principal and interest payments of \$265,404. The remaining \$5,870,000 to fund these projects will be included in this debt issuance, currently at a 15-year amortization. The annual debt service on the bonds and EESI loan is estimated at \$735,000 during the 12 year overlapping of the loans. Funding will be provided by projected utility savings of \$399,951, of which \$272,228 is scheduled to be provided to the City by the Oak Ridge Schools. The remaining debt service amount, estimated to range from \$335,000 for the first 12-years of the debt, down to \$70,000 for the last 3 years of the debt, will be funded by the General Fund.

Software - \$4,055,000 – At the August 14, 2017 City Council meeting, City Council approved \$4,026,530 for the purchase, installation, implementation, training, conversion, project management and maintenance services of Financial Management, Utility Billing and Enterprise Management Software. At this time, the major components of this item will be owned by the City's Electric Fund. The debt will be carried by the Electric Fund and the other users of the software, e.g. General Fund, Waterworks Fund, will pay annual payments to the Electric Fund for their share of the debt service for usage of the software. The software debt has been restructured with principal payments to begin in fiscal 2020 and end in fiscal 2028. This structure more closely matches the debt capacity created by the refunding of 2009 Electric Bonds.

Radio System Replacement - \$3,355,000 - This is for the replacement/upgrade of the City's radio system which is used primarily by the City's police and fire departments. The system is also used by other City and School departments. This includes construction of a 150-foot tower, repeaters, microwave link from Louisiana Avenue to Windrock Mountain and system compliant radios and related equipment. The amount of the debt required for this system has been reduced by the utilization of approximately \$840,000 in grant proceeds. Annual principal and interest payments are currently approximated at \$370,000 for 10 years. The City's Emergency Communications Fund will fund at least \$151,000 of the annual debt service payment, the remainder will be provided by the General and other City Funds.

Preschool/Senior Center - \$1,015,000 – This debt is primarily for the design and engineering costs for the Preschool and the Senior Center. Any amounts not utilized for these services will be used for site work and other related work for the construction of these two facilities. Debt service funding will be provided by the City's General Fund. This debt portion will amortized over 15 years with estimated debt service payments approximating \$80,000 annually. The debt issuance for the construction of these two facilities is anticipated to occur during calendar 2018.

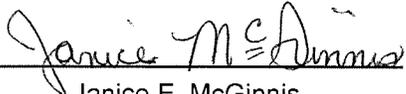
Comptroller Review

In accordance with Tennessee Code Annotated, Title 9, Chapter 21, the City submitted the attached Plan of Refunding to the Comptroller's Office of State and Local Finance for review. The Letter and Reports of the Director of the Office of State and Local Finance on the proposed refunding have not been received from the State at this time. Action will be need to be taken at the City Council meeting to incorporated the State's Letter and Report into the Bond Issuance Resolution as Exhibit B. The Directors Report does not constitute approval or disapproval of the proposed refunding plan.

Recommendation

Staff recommends adoption of the attached Bond Issuance Resolution. The initial bond resolution for the new bond proceeds was published in the September 22, 2017 Oak Ridger with the 20-day petitioning period ending on October 12th. Bonds are anticipated to be sold at competitive public sale during late October. Chris Bessler with Cumberland Securities will be at the meeting on Monday night to answer any questions regarding the refunding.

Attachment(s)
Bond Issuance Resolution
Plan of Refunding and Preliminary Refunding Analysis
Proposed Refunding of Series 2009 Bonds (Electric Portion) & New Money – As of September 25, 2017


Janice E. McGinnis

City Manager's Comments:

I have reviewed the above issue and recommend Council action as outlined in this document.


Mark S. Watson


Date

RESOLUTION

A RESOLUTION AUTHORIZING THE ISSUANCE OF GENERAL OBLIGATION BONDS OF THE CITY OF OAK RIDGE, TENNESSEE IN THE AGGREGATE PRINCIPAL AMOUNT OF NOT TO EXCEED \$21,350,000, IN ONE OR MORE SERIES; MAKING PROVISION FOR THE ISSUANCE, SALE AND PAYMENT OF SAID BONDS, ESTABLISHING THE TERMS THEREOF AND THE DISPOSITION OF PROCEEDS THEREFROM; AND PROVIDING FOR THE LEVY OF TAXES FOR THE PAYMENT OF PRINCIPAL OF, PREMIUM, IF ANY, AND INTEREST ON THE BONDS

WHEREAS, 9-21-101, *et seq.*, inclusive, Tennessee Code Annotated, as amended, authorizes the City of Oak Ridge, Tennessee (the "Municipality"), by resolution of the City Council, to issue and sell bonds to finance public works projects and to refund and refinance outstanding indebtedness; and

WHEREAS, the City Council of the Municipality hereby determines that it is necessary and advisable to issue general obligation bonds, in one or more series, for the purpose of financing in whole or in part, the cost of (i) the acquisition, design and construction of school facilities for use as a pre-kindergarten and a new public building to be used as a senior center, (ii) improvements to public buildings, including administrative buildings, schools, fire stations and maintenance buildings, to improve energy efficiency, (iii) public safety and communications equipment, including a radio system, to be used for police and fire protection and administrative purposes, (iv) the construction and improvement of recreation facilities, (v) the acquisition of software to be used in the administration of public works facilities, including financial and utility billing software, and (vi) all legal, fiscal, administrative, architectural and engineering costs incident to (collectively, the "Projects"); and

WHEREAS, the City Council of the Municipality did adopt on September 19, 2017 an initial resolution (the "Initial Resolution") authorizing the issuance of not to exceed \$14,325,000 for the purposes described above; and

WHEREAS, the Initial Resolution, together with the notice required by Section 9-21-206, Tennessee Code Annotated, as amended, has been published as required by law; and

WHEREAS, the Municipality has previously issued and has outstanding its General Obligation Refunding Bonds, Series 2009, dated February 3, 2009, maturing June 1, 2020 and thereafter (the "Outstanding Bonds"); and

WHEREAS, a portion of the Outstanding Bonds can now be refunded for the purpose of reducing the debt service requirements of the Municipality; and

WHEREAS, the City Council hereby determines that it is advisable to issue general obligation bonds, in one or more series, for the purpose of refunding a portion of the Outstanding Bonds; and

WHEREAS, a plan of refunding for the portion of the Outstanding Bonds to be refunded has been filed with the Director of State and Local Finance (the "State Director") as required by Section 9-21-903, Tennessee Code Annotated, as amended, and the State Director has submitted to the Municipality a report thereon, a copy of which has been made available to the members of the City Council; and

WHEREAS, it is the intention of the City Council of the Municipality to adopt this resolution for the purpose of authorizing not to exceed \$21,350,000 in aggregate principal amount of bonds for the above-described purposes, providing for the issuance, sale and payment of said bonds, establishing the terms thereof, and the disposition of proceeds therefrom, and providing for the levy of a tax for the payment of principal thereof, premium, if any, and interest thereon.

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

Section 1. Authority. The bonds authorized by this resolution are issued pursuant to 9-21-101, et seq., Tennessee Code Annotated, as amended, and other applicable provisions of law.

Section 2. Definitions. In addition to the terms defined in the preamble above, the following terms shall have the following meanings in this resolution unless the text expressly or by necessary implication requires otherwise:

(a) "Bonds" means the not to exceed \$21,350,000 General Obligation Bonds of the Municipality, to be dated their date of issuance, and having such series designation or such other dated date as shall be determined by the Mayor pursuant to Section 8 hereof.

(b) "Book-Entry Form" or "Book-Entry System" means a form or system, as applicable, under which physical bond certificates in fully registered form are issued to a Depository, or to its nominee as Registered Owner, with the certificate of bonds being held by and "immobilized" in the custody of such Depository, and under which records maintained by persons, other than the Municipality or the Registration Agent, constitute the written record that identifies, and records the transfer of, the beneficial "book-entry" interests in those bonds.

(c) "Code" means the Internal Revenue Code of 1986, as amended, and all regulations promulgated thereunder.

(d) "Depository" means any securities depository that is a clearing agency under federal laws operating and maintaining, with its participants or otherwise, a Book-Entry System, including, but not limited to, DTC.

(e) "DTC" means the Depository Trust Company, a limited purpose company organized under the laws of the State of New York, and its successors and assigns.

(f) "DTC Participant(s)" means securities brokers and dealers, banks, trust companies and clearing corporations that have access to the DTC System.

(g) "Financial Advisor" for the Bonds authorized herein means Cumberland Securities Company, Inc., Knoxville, Tennessee.

(h) "Mayor" shall mean the Mayor of the Municipality.

(i) "Governing Body" means the City Council.

(j) "Projects" means, in whole or in part, the cost of (i) the acquisition, design and construction of school facilities for use as a pre-kindergarten and a new public building to be used as a senior center, (ii) improvements to public buildings, including administrative buildings, schools, fire

stations and maintenance buildings, to improve energy efficiency, (iii) public safety and communications equipment, including a radio system, to be used for police and fire protection and administrative purposes, (iv) the construction and improvement of recreation facilities, (v) the acquisition of software to be used in the administration of public works facilities, including financial and utility billing software, and (vi) all legal, fiscal, administrative, architectural and engineering costs incident thereto.

(k) "Refunding Escrow Agent" means the refunding escrow agent appointed by the Mayor pursuant to the terms hereof, or any successor designated by the Mayor.

(l) "Refunding Escrow Agreement" means the Refunding Escrow Agreement, dated as of the date of the Bonds, between the Municipality and the Refunding Escrow Agent, in substantially the form of the document attached hereto as Exhibit A, subject to such changes thereto as shall be permitted by the terms of this resolution.

(m) "Refunded Bonds" means the portions of the maturities of the Outstanding Bonds designated for refunding by the Mayor pursuant to the terms hereof.

(n) "Registration Agent" means the registration and paying agent appointed by the Mayor pursuant to the terms hereof, or any successor designated by the Governing Body.

Section 3. Findings of the Governing Body; Compliance with Debt Management Policy.

(a) In conformance with the directive of the State Funding Board of the State of Tennessee, the Municipality has heretofore adopted its Debt Management Policy. The Governing Body hereby finds that the issuance and sale of the Bonds, as proposed herein, is consistent with the Municipality's Debt Management Policy.

(b) The estimated interest expense and costs of issuance of the Bonds have been made available to the Governing Body.

(c) The refunding of the Refunded Bonds authorized herein through the issuance of the Bonds will result in the reduction of the debt service payable by the Municipality over the term of the Refunded Bonds, thereby effecting a cost savings to the public.

(d) The Refunding Report of the State Director has been presented to the members of the Governing Body in connection with their consideration of this resolution and is attached hereto as Exhibit B.

Section 4. Authorization and Terms of the Bonds.

(a) For the purpose of providing funds to finance, in whole or in part, the cost of the Projects and costs incident thereto; reimbursement to the appropriate fund of the Municipality for prior expenditures for the foregoing costs, if applicable; the refunding of the Refunded Bonds; and payment of costs incident to the issuance and sale of the Bonds, there is hereby authorized to be issued bonds, in one or more series, of the Municipality in the aggregate principal amount of not to exceed \$21,350,000. The Bonds shall be issued in one or more series, in fully registered, book-entry form (except as otherwise set forth herein), without coupons, and subject to the adjustments permitted hereunder, shall be known as "General Obligation Bonds", shall be dated their date of issuance, and shall have such series designation or such other dated date as shall be determined by the Mayor pursuant to the terms hereof. The Bonds shall bear interest at a rate or rates not to exceed five percent (5.00%), payable (subject to the adjustments permitted hereunder) semi-annually on June 1 and December 1 in each year, commencing June 1, 2018.

The Bonds shall be issued initially in \$5,000 denominations or integral multiples thereof, as shall be requested by the original purchaser thereof. Subject to the adjustments permitted pursuant to the terms hereof, the Bonds shall mature serially or be subject to mandatory redemption and shall be payable on June 1 of each year, subject to prior optional redemption as hereinafter provided, in the years 2018 through 2033, inclusive; provided, however, such amortization may be adjusted in accordance with the terms hereof.

(b) Subject to the adjustments permitted under Section 8 hereof, the Bonds maturing on June 1, 2027 and thereafter shall be subject to redemption prior to maturity at the option of the Municipality on June 1, 2026 and thereafter, as a whole or in part at any time at the redemption price of par plus accrued interest to the redemption date.

If less than all the Bonds shall be called for redemption, the maturities to be redeemed shall be selected by the Governing Body in its discretion. If less than all of the Bonds within a single maturity shall be called for redemption, the interests within the maturity to be redeemed shall be selected as follows:

(i) if the Bonds are being held under a Book-Entry System by DTC, or a successor Depository, the Bonds to be redeemed shall be determined by DTC, or such successor Depository, by lot or such other manner as DTC, or such successor Depository, shall determine; or

(ii) if the Bonds are not being held under a Book-Entry System by DTC, or a successor Depository, the Bonds within the maturity to be redeemed shall be selected by the Registration Agent by lot or such other random manner as the Registration Agent in its discretion shall determine.

(c) Pursuant to the terms hereof, the Mayor is authorized to sell the Bonds, or any maturities thereof, as term bonds ("Term Bonds") with mandatory redemption requirements corresponding to the maturities set forth herein or as determined by the Mayor. In the event any or all the Bonds are sold as Term Bonds, the Municipality shall redeem Term Bonds on redemption dates corresponding to the maturity dates set forth herein, in aggregate principal amounts equal to the maturity amounts established pursuant to the terms hereof for each redemption date, as such maturity amounts may be adjusted pursuant to the terms hereof, at a price of par plus accrued interest thereon to the date of redemption. The Term Bonds to be redeemed within a single maturity shall be selected as follows:

If less than all of the Bonds within a single maturity shall be called for redemption, the interests within the maturity to be redeemed shall be selected as follows:

(i) if the Bonds are being held under a Book-Entry System by DTC, or a successor Depository, the Bonds to be redeemed shall be determined by DTC, or such successor Depository, by lot or such other manner as DTC, or such successor Depository, shall determine; or

(ii) if the Bonds are not being held under a Book-Entry System by DTC, or a successor Depository, the Bonds within the maturity to be redeemed shall be selected by the Registration Agent by lot or such other random manner as the Registration Agent in its discretion shall determine.

At its option, to be exercised on or before the forty-fifth (45th) day next preceding any such mandatory redemption date, the Municipality may (i) deliver to the Registration Agent for cancellation

Bonds to be redeemed, in any aggregate principal amount desired, and/or (ii) receive a credit in respect of its redemption obligation under this mandatory redemption provision for any Bonds of the maturity to be redeemed which prior to said date have been purchased or redeemed (otherwise than through the operation of this mandatory sinking fund redemption provision) and cancelled by the Registration Agent and not theretofore applied as a credit against any redemption obligation under this mandatory sinking fund provision. Each Bond so delivered or previously purchased or redeemed shall be credited by the Registration Agent at 100% of the principal amount thereof on the obligation of the Municipality on such payment date and any excess shall be credited on future redemption obligations in chronological order, and the principal amount of Bonds to be redeemed by operation of this mandatory sinking fund provision shall be accordingly reduced. The Municipality shall on or before the forty-fifth (45th) day next preceding each payment date furnish the Registration Agent with its certificate indicating whether or not and to what extent the provisions of clauses (i) and (ii) of this subsection are to be availed of with respect to such payment and confirm that funds for the balance of the next succeeding prescribed payment will be paid on or before the next succeeding payment date.

Notice of any call for redemption shall be given by the Registration Agent on behalf of the Municipality not less than twenty (20) nor more than sixty (60) days prior to the date fixed for redemption by sending an appropriate notice to the registered owners of the Bonds to be redeemed by first-class mail, postage prepaid, at the addresses shown on the Bond registration records of the Registration Agent as of the date of the notice; but neither failure to mail such notice nor any defect in any such notice so mailed shall affect the sufficiency of the proceedings for redemption of any of the Bonds for which proper notice was given. The notice may state that it is conditioned upon the deposit of moneys in an amount equal to the amount necessary to effect the redemption with the Registration Agent no later than the redemption date ("Conditional Redemption"). As long as DTC, or a successor Depository, is the registered owner of the Bonds, all redemption notices shall be mailed by the Registration Agent to DTC, or such successor Depository, as the registered owner of the Bonds, as and when above provided, and neither the Municipality nor the Registration Agent shall be responsible for mailing notices of redemption to DTC Participants or Beneficial Owners. Failure of DTC, or any successor Depository, to provide notice to any DTC Participant or Beneficial Owner will not affect the validity of such redemption. The Registration Agent shall mail said notices as and when directed by the Municipality pursuant to written instructions from an authorized representative of the Municipality (other than for a mandatory sinking fund redemption, notices of which shall be given on the dates provided herein) given at least forty-five (45) days prior to the redemption date (unless a shorter notice period shall be satisfactory to the Registration Agent). From and after the redemption date, all Bonds called for redemption shall cease to bear interest if funds are available at the office of the Registration Agent for the payment thereof and if notice has been duly provided as set forth herein. In the case of a Conditional Redemption, the failure of the Municipality to make funds available in part or in whole on or before the redemption date shall not constitute an event of default, and the Registration Agent shall give immediate notice to the Depository, if applicable, or the affected Bondholders that the redemption did not occur and that the Bonds called for redemption and not so paid remain outstanding.

(d) The Governing Body hereby authorizes and directs the Mayor to appoint the Registration Agent for the Bonds and hereby authorizes the Registration Agent so appointed to maintain Bond registration records with respect to the Bonds, to authenticate and deliver the Bonds as provided herein, either at original issuance or upon transfer, to effect transfers of the Bonds, to give all notices of redemption as required herein, to make all payments of principal and interest with respect to the Bonds as provided herein, to cancel and destroy Bonds which have been paid at maturity or upon earlier redemption or submitted for exchange or transfer, to furnish the Municipality at least annually a certificate of destruction with respect to Bonds cancelled and destroyed, and to furnish the Municipality at least annually an audit confirmation of Bonds paid, Bonds outstanding and payments made with respect to interest on the Bonds. The Mayor is hereby authorized to execute and the City Clerk is hereby

authorized to attest such written agreement between the Municipality and the Registration Agent as they shall deem necessary and proper with respect to the obligations, duties and rights of the Registration Agent. The payment of all reasonable fees and expenses of the Registration Agent for the discharge of its duties and obligations hereunder or under any such agreement is hereby authorized and directed.

(e) The Bonds shall be payable, both principal and interest, in lawful money of the United States of America at the main office of the Registration Agent. The Registration Agent shall make all interest payments with respect to the Bonds by check or draft on each interest payment date directly to the registered owners as shown on the Bond registration records maintained by the Registration Agent as of the close of business on the fifteenth day of the month next preceding the interest payment date (the "Regular Record Date") by depositing said payment in the United States mail, postage prepaid, addressed to such owners at their addresses shown on said Bond registration records, without, except for final payment, the presentation or surrender of such registered Bonds, and all such payments shall discharge the obligations of the Municipality in respect of such Bonds to the extent of the payments so made. Payment of principal of and premium, if any, on the Bonds shall be made upon presentation and surrender of such Bonds to the Registration Agent as the same shall become due and payable. All rates of interest specified herein shall be computed on the basis of a three hundred sixty (360) day year composed of twelve (12) months of thirty (30) days each. In the event the Bonds are no longer registered in the name of DTC, or a successor Depository, if requested by the Owner of at least \$1,000,000 in aggregate principal amount of the Bonds, payment of interest on such Bonds shall be paid by wire transfer to a bank within the continental United States or deposited to a designated account if such account is maintained with the Registration Agent and written notice of any such election and designated account is given to the Registration Agent prior to the record date.

(f) Any interest on any Bond that is payable but is not punctually paid or duly provided for on any interest payment date (hereinafter "Defaulted Interest") shall forthwith cease to be payable to the registered owner on the relevant Regular Record Date; and, in lieu thereof, such Defaulted Interest shall be paid by the Municipality to the persons in whose names the Bonds are registered at the close of business on a date (the "Special Record Date") for the payment of such Defaulted Interest, which shall be fixed in the following manner: the Municipality shall notify the Registration Agent in writing of the amount of Defaulted Interest proposed to be paid on each Bond and the date of the proposed payment, and at the same time the Municipality shall deposit with the Registration Agent an amount of money equal to the aggregate amount proposed to be paid in respect of such Defaulted Interest or shall make arrangements satisfactory to the Registration Agent for such deposit prior to the date of the proposed payment, such money when deposited to be held in trust for the benefit of the persons entitled to such Defaulted Interest as in this Section provided. Thereupon, not less than ten (10) days after the receipt by the Registration Agent of the notice of the proposed payment, the Registration Agent shall fix a Special Record Date for the payment of such Defaulted Interest which date shall be not more than fifteen (15) nor less than ten (10) days prior to the date of the proposed payment to the registered Owners. The Registration Agent shall promptly notify the Municipality of such Special Record Date and, in the name and at the expense of the Municipality, not less than ten (10) days prior to such Special Record Date, shall cause notice of the proposed payment of such Defaulted Interest and the Special Record Date therefor to be mailed, first-class postage prepaid, to each registered owner at the address thereof as it appears in the Bond registration records maintained by the Registration Agent as of the date of such notice. Nothing contained in this Section or in the Bonds shall impair any statutory or other rights in law or in equity of any registered owner arising as a result of the failure of the Municipality to punctually pay or duly provide for the payment of principal of, premium, if any, and interest on the Bonds when due.

(g) The Bonds are transferable only by presentation to the Registration Agent by the registered owner, or his legal representative duly authorized in writing, of the registered Bond(s) to be transferred with the form of assignment on the reverse side thereof completed in full and signed with the

name of the registered owner as it appears upon the face of the Bond(s) accompanied by appropriate documentation necessary to prove the legal capacity of any legal representative of the registered owner. Upon receipt of the Bond(s) in such form and with such documentation, if any, the Registration Agent shall issue a new Bond or the Bond to the assignee(s) in \$5,000 denominations, or integral multiples thereof, as requested by the registered owner requesting transfer. The Registration Agent shall not be required to transfer or exchange any Bond during the period commencing on a Regular or Special Record Date and ending on the corresponding interest payment date of such Bond, nor to transfer or exchange any Bond after the publication of notice calling such Bond for redemption has been made, nor to transfer or exchange any Bond during the period following the receipt of instructions from the Municipality to call such Bond for redemption; provided, the Registration Agent, at its option, may make transfers after any of said dates. No charge shall be made to any registered owner for the privilege of transferring any Bond, provided that any transfer tax relating to such transaction shall be paid by the registered owner requesting transfer. The person in whose name any Bond shall be registered shall be deemed and regarded as the absolute owner thereof for all purposes and neither the Municipality nor the Registration Agent shall be affected by any notice to the contrary whether or not any payments due on the Bonds shall be overdue. The Bonds, upon surrender to the Registration Agent, may, at the option of the registered owner, be exchanged for an equal aggregate principal amount of the Bonds of the same maturity in any authorized denomination or denominations.

(h) The Bonds shall be executed in such manner as may be prescribed by applicable law, in the name, and on behalf, of the Municipality with the signature of the Mayor and the attestation of the City Clerk.

(i) Except as otherwise provided in this resolution, the Bonds shall be registered in the name of Cede & Co., as nominee of DTC, which will act as securities depository for the Bonds. References in this Section to a Bond or the Bonds shall be construed to mean the Bond or the Bonds that are held under the Book-Entry System. One Bond for each maturity shall be issued to DTC and immobilized in its custody or a custodian of DTC. The Bond Registrar is a custodian and agent for DTC, and the Bond will be immobilized in its custody. A Book-Entry System shall be employed, evidencing ownership of the Bonds in authorized denominations, with transfers of beneficial ownership effected on the records of DTC and the DTC Participants pursuant to rules and procedures established by DTC.

Each DTC Participant shall be credited in the records of DTC with the amount of such DTC Participant's interest in the Bonds. Beneficial ownership interests in the Bonds may be purchased by or through DTC Participants. The holders of these beneficial ownership interests are hereinafter referred to as the "Beneficial Owners." The Beneficial Owners shall not receive the Bonds representing their beneficial ownership interests. The ownership interests of each Beneficial Owner shall be recorded through the records of the DTC Participant from which such Beneficial Owner purchased its Bonds. Transfers of ownership interests in the Bonds shall be accomplished by book entries made by DTC and, in turn, by DTC Participants acting on behalf of Beneficial Owners. SO LONG AS CEDE & CO., AS NOMINEE FOR DTC, IS THE REGISTERED OWNER OF THE BONDS, THE REGISTRATION AGENT SHALL TREAT CEDE & CO. AS THE ONLY HOLDER OF THE BONDS FOR ALL PURPOSES UNDER THIS RESOLUTION, INCLUDING RECEIPT OF ALL PRINCIPAL OF, PREMIUM, IF ANY, AND INTEREST ON THE BONDS, RECEIPT OF NOTICES, VOTING AND REQUESTING OR DIRECTING THE REGISTRATION AGENT TO TAKE OR NOT TO TAKE, OR CONSENTING TO, CERTAIN ACTIONS UNDER THIS RESOLUTION.

Payments of principal, interest, and redemption premium, if any, with respect to the Bonds, so long as DTC is the only owner of the Bonds, shall be paid by the Registration Agent directly to DTC or its nominee, Cede & Co., as provided in the Letter of Representation relating to the Bonds from the Municipality and the Registration Agent to DTC (the "Letter of Representation"). DTC shall remit such

payments to DTC Participants, and such payments thereafter shall be paid by DTC Participants to the Beneficial Owners. The Municipality and the Registration Agent shall not be responsible or liable for payment by DTC or DTC Participants for sending transaction statements or for maintaining, supervising or reviewing records maintained by DTC or DTC Participants.

In the event that (1) DTC determines not to continue to act as securities depository for the Bonds, or (2) to the extent permitted by the rules of DTC, the Municipality determines that the continuation of the Book-Entry System of evidence and transfer of ownership of the Bonds would adversely affect their interests or the interests of the Beneficial Owners of the Bonds, then the Municipality shall discontinue the Book-Entry System with DTC or, upon request of such original purchaser, deliver the Bonds to the original purchaser in the form of fully-registered Bonds, as the case may be. If the Municipality fails to identify another qualified securities depository to replace DTC, the Municipality shall cause the Registration Agent to authenticate and deliver replacement Bonds in the form of fully-registered Bonds to each Beneficial Owner. If the purchaser(s) certifies that it intends to hold the Bonds for its own account, then the Municipality may issue certificated Bonds without the utilization of DTC and the Book-Entry System.

THE MUNICIPALITY AND THE REGISTRATION AGENT SHALL NOT HAVE ANY RESPONSIBILITY OR OBLIGATIONS TO ANY PARTICIPANT OR ANY BENEFICIAL OWNER WITH RESPECT TO (i) THE BONDS; (ii) THE ACCURACY OF ANY RECORDS MAINTAINED BY DTC OR ANY DTC PARTICIPANT; (iii) THE PAYMENT BY DTC OR ANY DTC PARTICIPANT OF ANY AMOUNT DUE TO ANY BENEFICIAL OWNER IN RESPECT OF THE PRINCIPAL OF AND INTEREST ON THE BONDS; (iv) THE DELIVERY OR TIMELINESS OF DELIVERY BY DTC OR ANY DTC PARTICIPANT OF ANY NOTICE DUE TO ANY BENEFICIAL OWNER THAT IS REQUIRED OR PERMITTED UNDER THE TERMS OF THIS RESOLUTION TO BE GIVEN TO BENEFICIAL OWNERS; (v) THE SELECTION OF BENEFICIAL OWNERS TO RECEIVE PAYMENTS IN THE EVENT OF ANY PARTIAL REDEMPTION OF THE BONDS; OR (vi) ANY CONSENT GIVEN OR OTHER ACTION TAKEN BY DTC OR ITS NOMINEE, CEDE & CO., AS OWNER.

(j) The Registration Agent is hereby authorized to take such action as may be necessary from time to time to qualify and maintain the Bonds for deposit with DTC, including but not limited to, wire transfers of interest and principal payments with respect to the Bonds, utilization of electronic book entry data received from DTC in place of actual delivery of Bonds and provision of notices with respect to Bonds registered by DTC (or any of its designees identified to the Registration Agent) by overnight delivery, courier service, telegram, teletype or other similar means of communication. No such arrangements with DTC may adversely affect the interest of any of the owners of the Bonds; provided, however, that the Registration Agent shall not be liable with respect to any such arrangements it may make pursuant to this Section.

(k) The Registration Agent is hereby authorized to authenticate and deliver the Bonds to the original purchaser, upon receipt by the Municipality of the proceeds of the sale thereof and to authenticate and deliver Bonds in exchange for Bonds of the same principal amount delivered for transfer upon receipt of the Bond(s) to be transferred in proper form with proper documentation as hereinabove described. The Bonds shall not be valid for any purpose unless authenticated by the Registration Agent by the manual signature of an officer thereof on the certificate set forth herein on the Bond form.

(l) In case any Bond shall become mutilated, or be lost, stolen, or destroyed, the Municipality, in its discretion, shall issue, and the Registration Agent, upon written direction from the Municipality, shall authenticate and deliver, a new Bond of like tenor, amount, maturity and date, in exchange and substitution for, and upon the cancellation of, the mutilated Bond, or in lieu of and in

substitution for such lost, stolen or destroyed Bond, or if any such Bond shall have matured or shall be able to mature, instead of issuing a substituted Bond the Municipality may pay or authorize payment of such Bond without surrender thereof. In every case, the applicant shall furnish evidence satisfactory to the Municipality and the Registration Agent of the destruction, theft or loss of such Bond, and indemnify satisfactory to the Municipality and the Registration Agent; and the Municipality may charge the applicant for the issue of such new Bond an amount sufficient to reimburse the Municipality for the expense incurred by it in the issue thereof.

Section 5. Source of Payment. The Bonds shall be payable from unlimited ad valorem taxes to be levied on all taxable property within the Municipality. For the prompt payment of the principal of, premium, if any, and interest on the Bonds, the full faith and credit of the Municipality are hereby irrevocably pledged. That portion of the Bonds the proceeds of which are used to refund the Refunded Bonds, as determined by the Municipality, shall be additionally payable from but not secured by the revenues from the operation of the Municipality's electric system (the "System").

Section 6. Form of Bonds. The Bonds shall be in substantially the following form, the omissions to be appropriate completed when the Bonds are prepared and delivered:

(Form of Bond)

REGISTERED
Number _____

REGISTERED
\$ _____

UNITED STATES OF AMERICA
STATE OF TENNESSEE
COUNTY OF ANDERSON
CITY OF OAK RIDGE, TENNESSEE
GENERAL OBLIGATION REFUNDING AND IMPROVEMENT BOND, SERIES 2017

Interest Rate: Maturity Date: Date of Bond: CUSIP No.:

Registered Owner:

Principal Amount:

FOR VALUE RECEIVED, the City of Oak Ridge, Tennessee (the "Municipality") hereby promises to pay to the registered owner hereof, hereinabove named, or registered assigns, in the manner hereinafter provided, the principal amount hereinabove set forth on the maturity date hereinabove set forth (or upon earlier redemption as set forth herein), and to pay interest (computed on the basis of a 360-day year of twelve 30-day months) on said principal amount at the annual rate interest hereinabove set forth from the date hereof until said maturity date or redemption date, said interest being payable on June 1, 2018, and semi-annually thereafter on the first day of June and December in each year until this Bond matures or is redeemed. The principal hereof and interest hereon are payable in lawful money of the United States of America by check or draft at the principal corporate trust office of _____, _____, _____, as registration and agent and paying agent (the "Registration Agent"). The Registration Agent shall make all interest payments with respect to this Bond on each interest payment date directly to the registered owner hereof shown on the Bond registration records maintained by the Registration Agent as of the close of business on the fifteenth day of the month next preceding the interest payment date (the "Regular Record Date") by check or draft mailed to such owner at such owner's address shown on said Bond registration records, without, except for final payment, the presentation or surrender of this Bond, and all such payments shall discharge the

obligations of the Municipality to the extent of the payments so made. Any such interest not so punctually paid or duly provided for on any interest payment date shall forthwith cease to be payable to the registered owner on the relevant Regular Record Date; and, in lieu thereof, such defaulted interest shall be payable to the person in whose name this Bond is registered at the close of business on the date (the "Special Record Date") for payment of such defaulted interest to be fixed by the Registration Agent, notice of which shall be given to the owners of the Bonds of the issue of which this Bond is one not less than ten (10) days prior to such Special Record Date. Payment of principal of and premium, if any, on this Bond shall be made when due upon presentation and surrender of this Bond to the Registration Agent.

Except as otherwise provided herein or in the Resolution, as hereinafter defined, this Bond shall be registered in the name of Cede & Co., as nominee of The Depository Trust Company, New York, New York ("DTC"), which will act as securities depository for the Bonds of the series of which this Bond is one. One Bond for each maturity shall be issued to DTC and immobilized in its custody or a custodian of DTC. The Bond Registrar is a custodian and agent for DTC, and the Bond will be immobilized in its custody. A book-entry system shall be employed, evidencing ownership of the Bonds in \$5,000 denominations, or multiples thereof, with transfers of beneficial ownership effected on the records of DTC and the DTC Participants, as defined in the Resolution, pursuant to rules and procedures established by DTC. So long as Cede & Co., as nominee for DTC, is the registered owner of the Bonds, the Municipality and the Registration Agent shall treat Cede & Co. as the only owner of the Bonds for all purposes under the Resolution, including receipt of all principal and maturity amounts of, premium, if any, and interest on the Bonds, receipt of notices, voting and requesting or taking or not taking, or consenting to, certain actions hereunder. Payments of principal, maturity amounts, interest, and redemption premium, if any, with respect to the Bonds, so long as DTC is the only owner of the Bonds, shall be paid directly to DTC or its nominee, Cede & Co. DTC shall remit such payments to DTC Participants, and such payments thereafter shall be paid by DTC Participants to the Beneficial Owners, as defined in the Resolution. Neither the Municipality nor the Registration Agent shall be responsible or liable for payment by DTC or DTC Participants, for sending transaction statements or for maintaining, supervising or reviewing records maintained by DTC or DTC Participants. In the event that (1) DTC determines not to continue to act as securities depository for the Bonds or (2) to the extent permitted by the rules of DTC, the Municipality determines that the continuation of the book-entry system of evidence and transfer of ownership of the Bonds would adversely affect its interests or the interests of the Beneficial Owners of the Bonds, the Municipality may discontinue the book-entry system with DTC. If the Municipality fails to identify another qualified securities depository to replace DTC, the Municipality shall cause the Registration Agent to authenticate and deliver replacement Bonds in the form of fully-registered Bonds to each Beneficial Owner. Neither the Municipality nor the Registration Agent shall have any responsibility or obligations to DTC Participant or any Beneficial Owner with respect to (i) the Bonds; (ii) the accuracy or any records maintained by DTC or any DTC Participant; (iii) the payment by DTC or any DTC Participant of any amount due to any Beneficial Owner in respect of the principal or maturity amounts of and interest on the Bonds; (iv) the delivery or timeliness of delivery by DTC or any DTC Participant of any notice due to any Beneficial Owner that is required or permitted under the terms of the Resolution to be given to Beneficial Owners; (v) the selection of Beneficial Owners to receive payments in the event of any partial redemption of the Bonds; or (vi) any consent given or other action taken by DTC, or its nominee, Cede & Co., as owner.

Bonds of the issue of which this Bond is one maturing on June 1, 2027 and thereafter shall be subject to redemption prior to maturity at the option of the Municipality on June 1, 2026 and thereafter, as a whole or in part at any time at the redemption price of par plus accrued interest to the redemption date.

If less than all the Bonds shall be called for redemption, the maturities to be redeemed shall be designated by the City Council of the Municipality, in its discretion. If less than all the principal amount

of the Bonds of a maturity shall be called for redemption, the interests within the maturity to be redeemed shall be selected as follows:

(i) if the Bonds are being held under a Book-Entry System by DTC, or a successor Depository, the amount of the interest of each DTC Participant in the Bonds to be redeemed shall be determined by DTC, or such successor Depository, by lot or such other manner as DTC, or such successor Depository, shall determine; or

(ii) if the Bonds are not being held under a Book-Entry System by DTC, or a successor Depository, the Bonds within the maturity to be redeemed shall be selected by the Registration Agent by lot or such other random manner as the Registration Agent in its discretion shall determine.

[Subject to the credit hereinafter provided, the Municipality shall redeem Bonds maturing _____ on the redemption dates set forth below opposite the maturity dates, in aggregate principal amounts equal to the respective dollar amounts set forth below opposite the respective redemption dates at a price of par plus accrued interest thereon to the date of redemption. DTC, as securities depository for the series of Bonds of which this Bond is one, or such Person as shall then be serving as the securities depository for the Bonds, shall determine the interest of each Participant in the Bonds to be redeemed using its procedures generally in use at that time. If DTC or another securities depository is no longer serving as securities depository for the Bonds, the Bonds to be redeemed within a maturity shall be selected by the Registration Agent by lot or such other random manner as the Registration Agent in its discretion shall select. The dates of redemption and principal amount of Bonds to be redeemed on said dates are as follows:

<u>Final Maturity</u>	<u>Redemption Date</u>	<u>Principal Amount of Bonds Redeemed</u>
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*Final Maturity

At its option, to be exercised on or before the forty-fifth (45th) day next preceding any such redemption date, the Municipality may (i) deliver to the Registration Agent for cancellation Bonds to be redeemed, in any aggregate principal amount desired, and/or (ii) receive a credit in respect of its redemption obligation under this mandatory redemption provision for any Bonds of the maturity to be redeemed which prior to said date have been purchased or redeemed (otherwise than through the operation of this mandatory sinking fund redemption provision) and cancelled by the Registration Agent and not theretofore applied as a credit against any redemption obligation under this mandatory sinking fund provision. Each Bond so delivered or previously purchased or redeemed shall be credited by the Registration Agent at 100% of the principal amount thereof on the obligation of the Municipality on such payment date and any excess shall be credited on future redemption obligations in chronological order, and the principal amount of Bonds to be redeemed by operation of this mandatory sinking fund provision shall be accordingly reduced. The Municipality shall on or before the forty-fifth (45th) day next preceding each payment date furnish the Registration Agent with its certificate indicating whether or not and to what extent the provisions of clauses (i) and (ii) of this subsection are to be availed of with respect to such

payment and confirm that funds for the balance of the next succeeding prescribed payment will be paid on or before the next succeeding payment date.]

Notice of any call for redemption shall be given by the Registration Agent not less than twenty (20) nor more than sixty (60) days prior to the date fixed for redemption by sending an appropriate notice to the registered owners of the Bonds to be redeemed by first-class mail, postage prepaid, at the addresses shown on the Bond registration records of the Registration Agent as of the date of the notice; but neither failure to mail such notice nor any defect in any such notice so mailed shall affect the sufficiency of the proceedings for the redemption of any of the Bonds for which proper notice was given. The notice may state that it is conditioned upon the deposit of moneys in an amount equal to the amount necessary to effect the redemption with the Registration Agent no later than the redemption date ("Conditional Redemption"). As long as DTC, or a successor Depository, is the registered owner of the Bonds, all redemption notices shall be mailed by the Registration Agent to DTC, or such successor Depository, as the registered owner of the Bonds, as and when above provided, and neither the Municipality nor the Registration Agent shall be responsible for mailing notices of redemption to DTC Participants or Beneficial Owners. Failure of DTC, or any successor Depository, to provide notice to any DTC Participant will not affect the validity of such redemption. From and after any redemption date, all Bonds called for redemption shall cease to bear interest if funds are available at the office of the Registration Agent for the payment thereof and it notice has been duly provided as set forth in the Resolution, as hereafter defined. In the case of a Conditional Redemption, the failure of the Municipality to make funds available in part or in whole on or before the redemption date shall not constitute an event of default, and the Registration Agent shall give immediate notice to the [Depository or the] affected Bondholders that the redemption did not occur and that the Bond called for redemption and not so paid remain outstanding.

This Bond is transferable by the registered owner hereof in person or by such owner's attorney duly authorized in writing at the principal corporate trust office of the Registration Agent set forth on the front side hereof, but only in the manner, subject to limitations and upon payment of the charges provided in the Resolution, as hereafter defined, and upon surrender and cancellation of this Bond. Upon such transfer, a new Bond or Bonds of authorized denominations of the same maturity and interest rate for the same aggregate principal amount will be issued to the transferee in exchange therefor. The person in whose name this Bond is registered shall be deemed and regarded as the absolute owner thereof for all purposes and neither the Municipality nor the Registration Agent shall be affected by any notice to the contrary whether or not any payments due on the Bond shall be overdue. Bonds, upon surrender to the Registration Agent, may, at the option of the registered owner thereof, be exchanged for an equal aggregate principal amount of the Bonds of the same maturity in authorized denomination or denominations, upon the terms set forth in the Resolution. The Registration Agent shall not be required to transfer or exchange any Bond during the period commencing on a Regular Record Date or Special Record Date and ending on the corresponding interest payment date of such Bond, nor to transfer or exchange any Bond after the notice calling such Bond for redemption has been made, nor during a period following the receipt of instructions from the Municipality to call such Bond for redemption.

This Bond is one of a total authorized issue aggregating \$ _____ and issued by the Municipality to finance the cost of in whole or in part, the cost of (i) the acquisition, design and construction of school facilities for use as a pre-kindergarten and a new public building to be used as a senior center, (ii) improvements to public buildings, including administrative buildings, schools, fire stations and maintenance buildings, to improve energy efficiency, (iii) public safety and communications equipment, including a radio system, to be used for police and fire protection and administrative purposes, (iv) the construction and improvement of recreation facilities, (v) the acquisition of software to be used in the administration of public works facilities, including financial and utility billing software, and (vi) all legal, fiscal, administrative, architectural and engineering costs incident to; and the refunding of the Municipality's outstanding General Obligation Refunding Bonds, Series 2009, dated February 3, 2009,

maturing June 1, 2020 and thereafter (the "Refunded Bonds"); and the issuance costs of the Bonds, pursuant to 9-21-101, et seq., Tennessee Code Annotated, as amended, and pursuant to a resolution adopted by the City Council of the Municipality on October 9, 2017 (the "Resolution").

The Bonds shall be payable from unlimited ad valorem taxes to be levied on all taxable property within the Municipality. For the prompt payment of the principal of, premium, if any, and interest on the Bonds, the full faith and credit of the Municipality are hereby irrevocably pledged. That portion of the Bonds the proceeds of which are used to refund the Refunded Bonds, as determined by the Municipality, shall be additionally payable from but not secured by the revenues of the operation of the Municipality's electric system.

This Bond and the income therefrom are exempt from all present state, county and municipal taxes in Tennessee except (a) Tennessee excise taxes on interest on the Bond during the period the Bond is held or beneficially owned by any organization or entity, other than a sole proprietorship or general partnership, doing business in the State of Tennessee, and (b) Tennessee franchise taxes by reason of the inclusion of the book value of the Bond in Tennessee franchise tax base of any organization or entity, other than a sole proprietorship or general partnership, doing business in the State of Tennessee.

It is hereby certified, recited, and declared that all acts, conditions and things required to exist, happen and be performed precedent to and in the issuance of this Bond exist, happen and be performed precedent to and in the issuance of this Bond exist, have happened and have been performed in due time, form and manner as required by law, and that the amount of this Bond, together with all other indebtedness of the Municipality, does not exceed any limitation prescribed by the constitution and statutes of the State of Tennessee.

IN WITNESS WHEREOF, the Municipality has caused this Bond to be signed by its Mayor and attested by its City Clerk as of the date hereinabove set forth.

CITY OF OAK RIDGE, TENNESSEE

By: _____
Mayor

ATTESTED:

City Clerk

Transferable and payable at the principal corporate trust office of: _____
_____, _____

Date of Registration: _____

This Bond is one of the issue of Bonds issued pursuant to the Resolution hereinabove described.

Registration Agent

By: _____
Authorized Officer

(FORM OF ASSIGNMENT)

FOR VALUE RECEIVED, the undersigned sells, assigns and transfers unto _____, whose address is _____ (Please insert Federal Identification or Social Security Number of Assignee _____), the within Bond of City of Oak Ridge, Tennessee, and does hereby irrevocably constitute and appoint _____, attorney, to transfer the said Bond on the records kept for registration thereof with full power of substitution in the premises.

Dated: _____

NOTICE: The signature to this assignment must correspond with the name of the registered owner as it appears on the face of the within Bond in every particular, without alteration or enlargement or any change whatsoever.

Signature guaranteed:

NOTICE: Signature(s) must be guaranteed by a member firm of a Medallion Program acceptable to the Registration Agent

Section 7. Levy of Tax. The Municipality, through its Governing Body, shall annually levy and collect a tax upon all taxable property within the Municipality, in addition to all other taxes authorized by law, sufficient to pay principal of, premium, if any, and interest on the Bonds when due, and for that purpose there is hereby levied a direct annual tax in such amount as may be found necessary each year to pay principal and interest coming due on the Bonds in said year. Principal and interest falling due at any time when there are insufficient funds from this tax levy on hand shall be paid from the current funds of the Municipality and reimbursement therefor shall be made out of the taxes hereby provided to the levied when the same shall have been collected. The tax herein provided may be reduced

to the extent of any direct appropriations from other funds, taxes and revenues of the Municipality to the payment of debt service on the Bonds, including available revenues of the System.

Section 8. Sale of Bonds.

(a) The Bonds shall be offered for competitive public sale in one or more series, at a price of not less than 98% of par, plus accrued interest, as a whole or in part from time to time as shall be determined by the Mayor, in consultation with the Financial Advisor. The Bonds, or any series thereof, shall be sold by delivery of bids via physical delivery, mail, fax, or telephone or by electronic bidding means of an internet bidding service as shall be determined by the Mayor, in consultation with the Financial Advisor.

(b) If the Bonds are sold in more than one series, the Mayor is authorized to cause to be sold in each series an aggregate principal amount of Bonds less than that shown in Section 4 hereof for each series, so long as the total aggregate principal amount of all series issued does not exceed the total aggregate of Bonds authorized to be issued herein.

(c) The Mayor is further authorized with respect to each series of Bonds to:

(1) change the dated date of the Bonds, or any series thereof, to a date other than the date of issuance of the Bonds;

(2) change the designation of the Bonds, or any series thereof, to a designation other than "General Obligation Bonds" and to specify the series designation of the Bonds, or any series thereof;

(3) change the first interest payment date on the Bonds, or any series thereof, to a date other than June 1, 2018, provided that such date is not later than twelve months from the dated date of such series of Bonds;

(4) establish and adjust the principal and interest payment dates and the maturity amounts of the Bonds, or any series thereof, provided that (A) the total principal amount of all series of the Bonds does not exceed the total amount of Bonds authorized herein; (B) the final maturity date of each series shall not exceed the calendar year of the final maturity described in Section 4 hereof; and (C) the debt service schedule for that portion of the Bonds refunding the Refunded Bonds shall not be materially different than what was presented to the State Director in connection with the Refunding Report;

(5) adjust or remove the Municipality's optional redemption provisions of the Bonds, provided that the premium amount to be paid on Bonds or any series thereof does not exceed two percent (2%) of the principal amount thereof;

(6) refund less than all of the Outstanding Bonds;

(7) sell the Bonds, or any series thereof, or any maturities thereof as Term Bonds with mandatory redemption requirements corresponding to the maturities set forth herein or as otherwise determined by the Mayor, as he shall deem most advantageous to the Municipality; and

(8) cause all or a portion of the Bonds to be insured by a bond insurance policy issued by a nationally recognized bond insurance company if such insurance is requested and paid for by the winning bidder of the Bonds, or any series thereof.

The form of the Bond set forth in Section 6 hereof shall be conformed to reflect any changes made pursuant to this Section 8 hereof.

(d) The Mayor is authorized to sell the Bonds, or any series thereof, simultaneously with any other bonds or notes authorized by resolution or resolutions of the Governing Body. The Mayor is further authorized to sell the Bonds, or any series thereof, as a single issue of bonds with any other bonds with substantially similar terms authorized by resolution or resolutions of the Governing Body, in one or more series as the Mayor shall deem to be advantageous to the Municipality and in doing so, the Mayor is authorized to change the designation of the Bonds to a designation other than "General Obligation Bonds"; provided, however, that the total aggregate principal amount of combined bonds to be sold does not exceed the total aggregate principal amount of Bonds authorized by this resolution or bonds authorized by any other resolution or resolutions adopted by the Governing Body.

(e) The Mayor is authorized to award the Bonds, or any series thereof, in each case to the bidder whose bid results in the lowest true interest cost to the Municipality, provided the rate or rates on the Bonds does not exceed the maximum rate prescribed by Section 4 hereof. The award of the Bonds by the Mayor to the lowest bidder shall be binding on the Municipality, and no further action of the Governing Body with respect thereto shall be required.

(f) The Mayor and City Clerk are authorized to cause the Bonds, in book-entry form (except as otherwise permitted herein), to be authenticated and delivered by the Registration Agent to the successful bidder and to execute, publish, and deliver all certificates and documents, including an official statement and closing certificates, as they shall deem necessary in connection with the sale and delivery of the Bonds. The Mayor is hereby authorized to enter into a contract with the Financial Advisor, for financial advisory services in connection with the sale of the Bonds and to enter into an engagement letter with Bass, Berry & Sims PLC to serve as bond counsel in connection with the Bonds, and all actions heretofore taken by the officers of the Municipality in that regard are hereby ratified and approved.

(g) No Bonds shall be issued until the passage of twenty (20) days from the date of publication of the Initial Resolution, and in no event shall the Bonds be issued if a legally sufficient petition, as defined by Section 9-21-207, Tennessee Code Annotated, is filed within such twenty-day period.

Section 9. Disposition of Bond Proceeds. The proceeds of the sale of the Bonds shall be disbursed as follows:

(a) An amount sufficient, together with such other Municipality funds as may be identified by the Mayor and, if applicable, investment earnings on the foregoing, to refund the Refunded Bonds shall be applied to the refunding thereof by depositing such funds with the Escrow Agent and/or paying such funds directly to the holders (or paying agents or trustees for the holders) of the Refunded Bonds.

(b) The remainder of the proceeds of the sale of the Bonds shall be deposited with a financial institution regulated by the Federal Deposit Insurance Corporation or similar federal agency in a special fund known as the 2017 Construction Fund (the "Construction Fund"), or such other designation as shall be determined by the Mayor to be kept separate and apart from all other funds of the Municipality. The Municipality shall disburse funds in the Construction Fund to pay costs of issuance of the Bonds, including necessary legal, accounting and fiscal expenses, printing, engraving, advertising and similar expenses, administrative and clerical costs, Registration Agent fees, bond insurance premiums, if any, and other necessary miscellaneous expenses incurred in connection with the issuance and sale of the Bonds. Notwithstanding the foregoing, costs of issuance of the Bonds may be withheld from the good faith

deposit or purchase price of the Bonds and paid to the Financial Advisor to be used to pay costs of issuance of the Bonds. The remaining funds in the Construction Fund shall be disbursed solely to pay the costs of the Projects and to reimburse the Municipality for any funds previously expended for costs of the Projects. Money in the Construction Fund shall be secured in the manner prescribed by applicable statutes relative to the securing of public or trust funds, if any, or, in the absence of such a statute, by a pledge of readily marketable securities having at all times a market value of not less than the amount in said Construction Fund. Money in the Construction Fund shall be invested in such investments as shall be permitted by applicable law to the extent permitted by applicable law.

Section 10. Official Statement. The officers of the Municipality, or any of them, are hereby authorized and directed to provide for the preparation and distribution of a Preliminary Official Statement describing the Bonds. After bids have been received and the Bonds have been awarded, the officers of the Municipality, or any of them, shall make such completions, omissions, insertions and changes in the Preliminary Official Statement not inconsistent with this resolution as are necessary or desirable to complete it as a final Official Statement for purposes of Rule 15c2-12(e)(3) of the Securities and Exchange Commission. The officers of the Municipality, or any of them, shall arrange for the delivery to the successful bidder on the Bonds of a reasonable number of copies of the Official Statement within seven (7) business days after the Bonds have been awarded for delivery, by the successful bidder on the Bonds, to each potential investor requesting a copy of the Official Statement and to each person to whom such bidder and members of his bidding group initially sell the Bonds.

The officers of the Municipality, or any of them, are authorized, on behalf of the Municipality, to deem the Preliminary Official Statement and the Official Statement in final form, each to be final as of its date within the meaning of Rule 15c2-12(b)(1), except for the omission in the Preliminary Official Statement of certain pricing and other information allowed to be omitted pursuant to such Rule 15c2-12(b)(1). The distribution of the Preliminary Official Statement and the Official Statement in final form shall be conclusive evidence that each has been deemed in final form as of its date by the Municipality except for the omission in the Preliminary Official Statement of such pricing and other information.

Notwithstanding the foregoing, no Official Statement is required to be prepared if the Bonds, or any series thereof, are purchased by a purchaser that certifies that such purchaser intends to hold the Bonds, or any series thereof, for its own account and has no present intention to reoffer the Bonds, or any series thereof.

Section 11. Refunding Escrow Agreement. With respect to each emission of Bonds, for the purpose of providing for the payment of the principal of and premium, if any, and interest on the Refunded Bonds, the Mayor is hereby authorized and directed to execute and the City Clerk to attest on behalf of the Municipality the Refunding Escrow Agreement with the Refunding Escrow Agent and to deposit with the Refunding Escrow Agent the amounts to be used by the Refunding Escrow Agent to purchase Government Securities as provided therein; provided, however, that the yield on such investments shall be determined in such manner that none of the Bonds will be an "arbitrage bond" within the meaning of Section 148(a) of the Code. The form of the Refunding Escrow Agreement presented to this meeting and attached hereto as Exhibit A is hereby in all respects approved and the Mayor and the City Clerk are hereby authorized and directed to execute and deliver same on behalf of the Municipality in substantially the form thereof presented to this meeting, or with such changes as may be approved by the Mayor and the City Clerk, their execution thereof to constitute conclusive evidence of their approval of all such changes, including modifications to the Refunding Escrow Agreement. The Refunding Escrow Agent is hereby authorized and directed to hold and administer all funds deposited in trust for the payment when due of principal of and premium, if any, and interest on the Refunded Bonds and to exercise such duties as set forth in the Refunding Escrow Agreement.

Section 12. Redemption and Prepayment of the Refunded Bonds. The Mayor and the City Clerk, or either of them, are hereby authorized and directed to take all steps necessary to prepay or redeem the Refunded Bonds at their earliest possible prepayment or redemption date, including the giving of and publication of any prepayment or redemption notice as required by the resolutions authorizing the issuance of the Refunded Bonds.

Section 13. Discharge and Satisfaction of Bonds. If the Municipality shall pay and discharge the indebtedness evidenced by any series of the Bonds in any one or more of the following ways:

(a) By paying or causing to be paid, by deposit of sufficient funds as and when required with the Registration Agent, the principal of and interest on such Bonds as and when the same become due and payable;

(b) By depositing or causing to be deposited with any trust company or financial institution whose deposits are insured by the Federal Deposit Insurance Corporation or similar federal agency and which has trust powers (an "Agent"; which agent may be the Registration Agent) in trust or escrow, on or before the date of maturity or redemption, sufficient money or Defeasance Obligations, as hereafter defined, the principal of and interest on which, when due and payable, will provide sufficient moneys to pay or redeem such Bonds and to pay interest thereon when due until the maturity or redemption date (provided, if such Bonds are to be redeemed prior to maturity thereof, proper notice of such redemption shall have been given or adequate provision shall have been made for the giving of such notice); or

(c) By delivering such Bonds to the Registration Agent for cancellation by it;

and if the Municipality shall also pay or cause to be paid all other sums payable hereunder by the Municipality with respect to such Bonds, or make adequate provision therefor, and by resolution of the Governing Body instruct any such Agent to pay amounts when and as required to the Registration Agent for the payment of principal of and interest on such Bonds when due, then and in that case the indebtedness evidenced by such Bonds shall be discharged and satisfied and all covenants, agreements and obligations of the Municipality to the holders of such Bonds shall be fully discharged and satisfied and shall thereupon cease, terminate and become void.

If the Municipality shall pay and discharge the indebtedness evidenced by any of the Bonds in the manner provided in either clause (a) or clause (b) above, then the registered owners thereof shall thereafter be entitled only to payment out of the money or Defeasance Obligations deposited as aforesaid.

Except as otherwise provided in this Section, neither Defeasance Obligations nor moneys deposited with the Registration Agent pursuant to this Section nor principal or interest payments on any such Defeasance Obligations shall be withdrawn or used for any purpose other than, and shall be held in trust for, the payment of the principal and interest on said Bonds; provided that any cash received from such principal or interest payments on such Defeasance Obligations deposited with the Registration Agent, (A) to the extent such cash will not be required at any time for such purpose, shall be paid over to the Municipality as received by the Registration Agent and (B) to the extent such cash will be required for such purpose at a later date, shall, to the extent practicable, be reinvested in Defeasance Obligations maturing at times and in amounts sufficient to pay when due the principal and interest to become due on said Bonds on or prior to such redemption date or maturity date thereof, as the case may be, and interest earned from such reinvestments shall be paid over to the Municipality, as received by the Registration Agent. For the purposes of this Section, "Defeasance Obligations" shall mean direct obligations of, or obligations, the principal of and interest on which are guaranteed by, the United States of America, or any agency thereof, obligations of any agency or instrumentality of the United States or any other obligations

at the time of the purchase thereof are permitted investments under Tennessee law for the purposes described in this Section, which bonds or other obligations shall not be subject to redemption prior to their maturity other than at the option of the registered owner thereof.

Section 14. Federal Tax Matters Related to the Bonds.

(a) The Bonds are expected to be issued as federally tax-exempt bonds. If so issued, the Municipality hereby covenants that it will not use, or permit the use of, any proceeds of the Bonds in a manner that would cause the Bonds to be subjected to treatment under Section 148 of the Code, and applicable regulations thereunder, as an "arbitrage bond." To that end, the Municipality shall comply with applicable regulations adopted under said Section 148. The Municipality further covenants with the registered owners from time to time of the Bonds that it will, throughout the term of the Bonds and through the date that the final rebate, if any, must be made to the United States in accordance with Section 148 of the Code, comply with the provisions of Sections 103 and 141 through 150 of the Code and all regulations proposed and promulgated thereunder that must be satisfied in order that interest on the Bonds shall be and continue to be excluded from gross income for federal income tax purposes under Section 103 of the Code.

(b) It is reasonably expected that the Municipality will reimburse itself for certain expenditures made by it in connection with the Projects by issuing the Bonds. This resolution shall be placed in the minutes of the Governing Body and shall be made available for inspection by the general public at the office of the Governing Body. This resolution constitutes a declaration of official intent under Treas. Reg. §1.150-2.

(c) The appropriate officers of the Municipality are authorized and directed, on behalf of the Municipality, to execute and deliver all such certificates and documents that may be required of the Municipality in order to comply with the provisions of this Section related to the issuance of the Bonds.

Section 15. Continuing Disclosure. The Municipality hereby covenants and agrees that it will provide annual financial information and event notices if and as required by Rule 15c2-12 of the Securities Exchange Commission for the Bonds. The Mayor is authorized to execute at the closing of the sale of the Bonds an agreement for the benefit of and enforceable by the owners of the Bonds specifying the details of the financial information and event notices to be provided and its obligations relating thereto. Failure of the Municipality to comply with the undertaking herein described and to be detailed in said closing agreement shall not be a default hereunder, but any such failure shall entitle the owner or owners of any of the Bonds to take such actions and to initiate such proceedings as shall be necessary and appropriate to cause the Municipality to comply with their undertaking as set forth herein and in said agreement, including the remedies of mandamus and specific performance.

Section 16. Reasonably Expected Economic Life. The "reasonably expected economic life" of the Project within the meaning of Sections 9-21-101, *et seq.*, Tennessee Code Annotated, is greater than the term of the Bonds financing said Projects.

Section 17. Resolution a Contract. The provisions of this resolution shall constitute a contract between the Municipality and the registered owners of the Bonds, and after the issuance of the Bonds, no change, variation or alteration of any kind in the provisions of this resolution shall be made in any manner until such time as the Bonds and interest due thereon shall have been paid in full.

Section 18. Separability. If any section, paragraph or provision of this resolution shall be held to be invalid or unenforceable for any reason, the invalidity or unenforceability of such section, paragraph or provision shall not affect any of the remaining provisions of this resolution.

Section 19. Repeal of Conflicting Resolutions and Effective Date. All other resolutions and orders, or parts thereof in conflict with the provisions of this resolution, are, to the extent of such conflict, hereby repealed and this resolution shall be in immediate effect from and after its adoption.

Adopted and approved this 9th day of October, 2017.

APPROVED AS TO FORM
AND LEGALITY:



Kenneth R. Krushenski, City Attorney

Warren L. Gooch, Mayor

Beth Hickman, City Clerk

STATE OF TENNESSEE)

COUNTY OF ANDERSON)

I, Beth Hickman, certify that I am the duly qualified and acting City Clerk of City of Oak Ridge, Tennessee, and as such official I further certify that attached hereto is a copy of excerpts from the minutes of a meeting of the governing body of the Municipality held on October 9, 2017; that these minutes were promptly and fully recorded and are open to public inspection; that I have compared said copy with the original minute record of said meeting in my official custody; and that said copy is a true, correct and complete transcript from said original minute record insofar as said original record relates to the Municipality's General Obligation Bonds.

WITNESS my official signature and seal of said Municipality on October ____, 2017.

City Clerk

EXHIBIT A

FORM OF REFUNDING ESCROW AGREEMENT

CITY OF OAK RIDGE, TENNESSEE

\$21,350,000 GENERAL OBLIGATION BONDS,
SERIES 2017

REFUNDING ESCROW AGREEMENT

This Refunding Escrow Agreement is made and entered into as of _____, 2017, by and between the City of Oak Ridge, Tennessee (the "Issuer") and _____ (the "Agent").

WITNESSETH:

WHEREAS, the Issuer has determined to provide for payment of the debt service requirements of certain of its outstanding debt obligations, as described herein (the "Outstanding Bonds") by depositing in escrow with the Agent funds sufficient to pay the principal of and interest on the Outstanding Bonds as set forth on Exhibit A hereto; and

WHEREAS, in order to obtain the funds needed to refund the Outstanding Bonds, the Issuer has authorized and issued its General Obligation Bonds, Series 2017 (the "Refunding Bonds"); and

WHEREAS, a portion of the proceeds derived from the sale of the Refunding Bonds will be deposited in escrow with the Agent hereunder and applied to the purchase of certain securities described herein, the principal amount thereof together with interest thereon to mature at such times and in such amounts as shall be sufficient to pay when due all of the principal of and interest on the Outstanding Bonds as set forth on Exhibit A; and

WHEREAS, in order to create the escrow hereinabove described, provide for the deposit of said Refunding Bond proceeds and other funds of the Issuer and the application thereof, and to provide for the payment of the Outstanding Bonds, the parties hereto do hereby enter into this Agreement;

NOW, THEREFORE, the Issuer, in consideration of the foregoing and the mutual covenants herein set forth and in order to secure the payment of the Outstanding Bonds according to their tenor and effect, does by these presents hereby grant, warrant, demise, release, convey, assign, transfer, alien, pledge, set over and confirm, to the Agent, and to its successors hereunder, and to it and its assigns forever, in escrow, all and singular the property hereinafter described to wit:

DIVISION I

All right, title and interest of the Issuer in and to \$ _____ derived from the proceeds of the sale of the Refunding Bonds.

DIVISION II

All right, title and interest of the Issuer in and to the Government Securities purchased with the funds described in Division I hereof and more particularly described in Exhibit B, attached hereto, and to all income, earnings and increment derived from or accruing to the Government Securities.

DIVISION III

Any and all other property of every kind and nature from time to time hereafter, by delivery or by writing of any kind, conveyed, pledged, assigned or transferred in escrow hereunder by the Issuer or by anyone in its behalf to the Agent, which is hereby authorized to receive the same at any time to be held in escrow hereunder.

DIVISION IV

All property that is by the express provisions of this Agreement required to be subject to the pledge hereof and any additional property that may, from time to time hereafter, by delivery or by writing of any kind, be subject to the pledge hereof, by the Issuer or by anyone in its behalf, and the Agent is hereby authorized to receive the same at any time to be held in escrow hereunder.

TO HAVE AND TO HOLD, all and singular, the escrowed property, including all additional property which by the terms hereof has or may become subject to this Agreement, unto the Agent, and its successors and assigns, forever.

The escrowed property shall be held in escrow for the benefit and security of the owners from time to time of the Outstanding Bonds; but if the principal of and interest on the Outstanding Bonds shall be fully and promptly paid when due in accordance with the terms hereof, then this Agreement shall be and become void and of no further force and effect, otherwise the same shall remain in full force and effect, subject to the covenants and conditions hereinafter set forth.

ARTICLE I. DEFINITIONS AND CONSTRUCTION

SECTION 1.1 Definitions. In addition to words and terms elsewhere defined in this Agreement, the following words and terms as used in this Agreement shall have the following meanings, unless some other meaning is plainly intended:

"Agreement" means this Refunding Escrow Agreement;

"Code" means the Internal Revenue Code of 1986, as amended, and any lawful regulations promulgated thereunder;

"Escrow Fund" shall have the meaning ascribed to it in Section 2.1 hereof;

"Escrow Property", "escrow property" or "escrowed property" means the property, rights and interest of the Issuer that are described in Divisions I through IV of this Agreement and hereinabove conveyed in escrow to the Agent;

"Government Securities" means obligations and securities described in Section 9-21-914, Tennessee Code Annotated;

"Outstanding Bonds" means those certain General Obligation Refunding Bonds, Series 2009, dated February 3, 2009, maturing June 1, 2020 and thereafter identified on Exhibit A hereof; and

"Written Request" means a request in writing signed by the Mayor of the Issuer or by any other officer or official of the Issuer duly authorized by the Issuer to act in the place of the Mayor.

SECTION 1.2 Construction. Words of the masculine gender shall be deemed and construed to include correlative words of the feminine and neuter genders. Words importing the singular number shall include the plural number and vice versa unless the context shall otherwise indicate. The word "person" shall include corporations, associations, natural persons and public bodies unless the context shall otherwise indicate. Reference to a person other than a natural person shall include its successors.

ARTICLE II. ESTABLISHMENT AND ADMINISTRATION OF FUNDS

SECTION 2.1 Creation of Escrow; Deposit of Funds. The Issuer hereby creates and establishes with the Agent a special and irrevocable escrow composed of the Escrowed Property and hereby deposits with the Agent and the Agent hereby acknowledges receipt of \$_____ as described in Division I hereof. The monies so deposited, together with investment income therefrom, is herein referred to as the "Escrow Fund" and shall constitute a fund to be held by the Agent as a part of the Escrowed Property created, established, and governed by this Agreement.

SECTION 2.2 Investment of Funds. The monies described in Section 2.1 hereof shall be held or invested as follows:

(a) the amount of \$_____ shall be used to purchase the Government Securities described on Exhibit B attached hereto; and

(b) the amount of \$_____ shall be held as cash in a non-interest-bearing account.

Except as provided in Sections 2.4 and 2.6 hereof, the investment income from the Government Securities in the Escrow Fund shall be credited to the Escrow Fund and shall not be reinvested. The Agent shall have no power or duty to invest any monies held hereunder or to make substitutions of Government Securities held hereunder or to sell, transfer, or otherwise dispose of the Government Securities acquired hereunder except as provided herein.

SECTION 2.3 Disposition of Escrow Funds. The Agent shall without further authorization or direction from the Issuer collect the principal and interest on the Government Securities promptly as the same shall fall due. From the Escrow Fund, to the extent that monies therein are sufficient for such purpose, the Agent shall make timely payments to the paying agent or its successor, for the Outstanding Bonds of monies sufficient for the payment of the principal of and interest on the Outstanding Bonds as the same shall become due and payable. Amounts and dates of principal and interest payments and the name and address of the paying agent with respect to the Outstanding Bonds are set forth on Exhibit A. Payment on the dates and to the paying agent in accordance with Exhibit A shall constitute full performance by the Agent of its duties hereunder with respect to each respective payment. The Issuer represents and warrants that the Escrow Fund, if held, invested and disposed of by the Agent in accordance with the provisions of this Agreement, will be sufficient to make the foregoing payments. No paying agent fees, fees and expenses of the Agent, or any other costs and expenses associated with the Refunding Bonds or the Outstanding Bonds shall be paid from the Escrow Fund, and the Issuer agrees to pay all such fees, expenses, and costs from its legally available funds as such payments become due. When the Agent has made all required payments of principal and interest on the Outstanding Bonds to the

paying agent as hereinabove provided, the Agent shall transfer any monies or Government Securities then held hereunder to the Issuer and this Agreement shall terminate.

SECTION 2.4 Excess Funds. Except as provided in Section 2.6 hereof, amounts held by the Agent, representing interest on the Government Securities in excess of the amount necessary to make the corresponding payment of principal and/or interest on the Outstanding Bonds, shall be held by the Agent without interest and shall be applied before any other Escrow Fund monies to the payment of the next ensuing principal and/or interest payment on the Outstanding Bonds. Upon retirement of all the Outstanding Bonds, the Agent shall pay any excess amounts remaining in the Escrow Fund to the Issuer.

SECTION 2.5 Reports. The Agent shall deliver to the City Clerk of the Issuer, within 90 days of the close of the Issuer's fiscal year, a report current as of the end of such fiscal year, which shall summarize all transactions relating to the Escrow Fund effected during the immediately preceding fiscal year of the Issuer and which also shall set forth all assets in the Escrow Fund as of the end of such fiscal year and set forth opening and closing balances thereof for that fiscal year. The Agent shall also deliver to the City Clerk, within 90 days following the final disposition of funds herefrom, a report summarizing all transactions relating to the Escrow Fund effected during the term thereof.

SECTION 2.6 Investment of Moneys Remaining in Escrow Fund. The Agent may invest and reinvest any monies remaining from time to time in the Escrow Fund until such time as they are needed. Such monies shall be invested in Government Securities, maturing no later than the next interest payment date of the Outstanding Bonds, or for such periods or at such interest rates as the Agent shall be directed by Written Request, provided, however, that the Issuer shall furnish the Agent, as a condition precedent to such investment, with an opinion from nationally recognized bond counsel stating that such reinvestment of such monies will not, under the statutes, rules and regulations then in force and applicable to obligations issued on the date of issuance of the Refunding Bonds, cause the interest on the Refunding Bonds or the Outstanding Bonds not to be excluded from gross income for Federal income tax purposes and that such investment is not inconsistent with the statutes and regulations applicable to the Refunding Bonds and Outstanding Bonds. Any interest income resulting from reinvestment of monies pursuant to this Section 2.6 shall be applied first to the payment of principal of and interest on the Outstanding Bonds to the extent the Escrow is or will be insufficient to retire the Outstanding Bonds as set forth on Exhibit A and any excess shall be paid to the Issuer to be applied to the payment of the Refunding Bonds or the expenses of issuance thereof.

SECTION 2.7 Irrevocable Escrow Created. The deposit of monies, Government Securities, matured principal amounts thereof, and investment proceeds therefrom in the Escrow Fund shall constitute an irrevocable deposit of said monies and Government Securities for the benefit of the holders of the Outstanding Bonds, except as provided herein with respect to amendments permitted under Section 4.1 hereof. All the funds and accounts created and established pursuant to this Agreement shall be and constitute escrow funds for the purposes provided in this Agreement and shall be kept separate and distinct from all other funds of the Issuer and the Agent and used only for the purposes and in the manner provided in this Agreement.

SECTION 2.8 Redemption of Outstanding Bonds. The Outstanding Bonds shall be redeemed as stated on Exhibit C attached hereto. The Agent is authorized to give notice to the paying agent for the Outstanding Bonds not less than 45 days prior to the redemption date of the Outstanding Bonds directing the paying agent to give notice to the holders of the Outstanding Bonds as and when required by the resolution authorizing the Outstanding Bonds.

ARTICLE III.
CONCERNING THE AGENT

SECTION 3.1 Appointment of Agent. The Issuer hereby appoints the Agent as escrow agent under this Agreement.

SECTION 3.2 Acceptance by Agent. By execution of this Agreement, the Agent accepts the duties and obligations as Agent hereunder. The Agent further represents that it has all requisite power, and has taken all corporate actions necessary to execute the escrow hereby created.

SECTION 3.3 Liability of Agent. The Agent shall be under no obligation to inquire into or be in any way responsible for the performance or nonperformance by the Issuer or any paying agent of its obligations, or to protect any of the Issuer's rights under any bond proceedings or any of the Issuer's other contracts with or franchises or privileges from any state, county, Issuer or other governmental agency or with any person. The Agent shall not be liable for any act done or step taken or omitted to be taken by it, or for any mistake of fact or law, or anything which it may do or refrain from doing, except for its own gross negligence or willful misconduct in the performance or nonperformance of any obligation imposed upon it hereunder. The Agent shall not be responsible in any manner whatsoever for the recitals or statements contained herein or in the Outstanding Bonds or in the Refunding Bonds or in any proceedings taken in connection therewith, but they are made solely by the Issuer. The Agent shall have no lien whatsoever upon any of the monies or investments in the Escrow Fund for the payment of fees and expenses for services rendered by the Agent under this Agreement.

The Agent shall not be liable for the accuracy of the calculations as to the sufficiency of Escrow Fund monies and Government Securities and the earnings thereon to pay the Outstanding Bonds. So long as the Agent applies any monies, the Government Securities and the interest earnings therefrom to pay the Outstanding Bonds as provided herein, and complies fully with the terms of this Agreement, the Agent shall not be liable for any deficiencies in the amounts necessary to pay the Outstanding Bonds caused by such calculations. The Agent shall not be liable or responsible for any loss resulting from any investment made pursuant to this Agreement and in full compliance with the provisions hereof.

In the event of the Agent's failure to account for any of the Government Securities or monies received by it, said Government Securities or monies shall be and remain the property of the Issuer in escrow for the benefit of the holders of the Outstanding Bonds, as herein provided, and if for any improper reason such Government Securities or monies are applied to purposes not provided for herein or misappropriated by the Agent, the assets of the Agent shall be impressed with a trust for the amount thereof until the required application of such funds shall be made or such funds shall be restored to the Escrow Fund.

SECTION 3.4 Permitted Acts. The Agent and its affiliates may become the owner of or may deal in the Refunding Bonds or Outstanding Bonds as fully and with the same rights as if it were not the Agent.

SECTION 3.5 Exculpation of Funds of Agent. Except as set forth in Section 3.3, none of the provisions contained in this Agreement shall require the Agent to use or advance its own funds or otherwise incur personal financial liability in the performance of any of its duties or the exercise of any of its rights or powers hereunder. The Agent shall be under no liability for interest on any funds or other property received by it hereunder, except as herein expressly provided.

SECTION 3.6 Payment of Deficiency by Issuer. The Issuer agrees that it will promptly and without delay remit or cause to be remitted to the Agent within ten (10) days after receipt of the Agent's

written request, such additional sum or sums of money as may be necessary in excess of the sums provided for under Section 2.1 hereof to assure the payment when due of the principal of, premium, if any, and interest on the Outstanding Bonds.

SECTION 3.7 No Redemption or Acceleration of Maturity. The Agent will not pay any of the principal of or interest on the Outstanding Bonds, except as provided in Exhibit A attached hereto and will not redeem or accelerate the maturity of any of the Outstanding Bonds except as provided in Section 2.8 hereof.

SECTION 3.8 Qualifications of Agent. There shall at all times be an Agent hereunder that shall be a corporation or banking association organized and doing business under the laws of the United States or any state, authorized under the laws of its incorporation to exercise the powers herein granted, having a combined capital, surplus, and undivided profits of at least \$75,000,000 and subject to supervision or examination by federal or state authority. If such corporation or association publishes reports of condition at least annually, pursuant to law or to the requirements of any supervising or examining authority above referred to, then for the purposes of this paragraph the combined capital, surplus, and undivided profits of such corporation or association shall be deemed to be its combined capital, surplus, and undivided profits as set forth in its most recent report of condition as published. In case at any time the Agent shall cease to be eligible in accordance with the provisions of this section, the Agent shall resign immediately in the manner and with the effect specified herein.

SECTION 3.9 Resignation of Agent. The Agent may at any time resign by giving direct written notice to the Issuer and by giving the holders of the Outstanding Bonds notice by first-class mail of such resignation. Upon receiving such notice of resignation, the Issuer shall promptly appoint a successor escrow agent by resolution of its governing body. If no successor escrow agent shall have been appointed and have accepted appointment within thirty (30) days after the publication of such notice of resignation, the resigning Agent may petition any court of competent jurisdiction located in Anderson County, Tennessee for the appointment of a successor, or any holder of the Outstanding Bonds may, on behalf of himself and others similarly situated, petition any such court for the appointment of a successor. Such court may thereupon, after such notice, if any, as it may deem proper, appoint a successor meeting the qualifications set forth in Section 3.8. The Agent shall serve as escrow agent hereunder until its successor shall have been appointed and such successor shall have accepted the appointment.

SECTION 3.10 Removal of Agent. In case at any time the Agent shall cease to be eligible in accordance with the provisions of Section 3.8 hereof and shall fail to resign after written request therefor by the Issuer or by any holder of the Outstanding Bonds, or the Agent shall become incapable of acting or shall be adjudged a bankrupt or insolvent or a receiver of the Agent or any of its property shall be appointed, or any public officer shall take charge or control of the Agent or its property or affairs for the purpose of rehabilitation, conservation, or liquidation, then in any such case, the Issuer may remove the Agent and appoint a successor by resolution of its governing body or any such bondholder may, on behalf of himself and all others similarly situated, petition any court of competent jurisdiction situated in the Issuer for the removal of the Agent and the appointment of a successor. Such court may thereupon, after such notice, if any, as it may deem proper, remove the Agent and appoint a successor who shall meet the qualifications set forth in Section 3.8. Unless incapable of serving, the Agent shall serve as escrow agent hereunder until its successor shall have been appointed and such successor shall have accepted the appointment.

The holders of a majority in aggregate principal amount of all the Outstanding Bonds at any time outstanding may at any time remove the Agent and appoint a successor by an instrument or concurrent instruments in writing signed by such bondholders and presented, together with the successor's acceptance of appointment, to the Issuer and the Agent.

Any resignation or removal of the Agent and appointment of a successor pursuant to any of the provisions of this Agreement shall become effective upon acceptance of appointment by the successor as provided in Section 3.11 hereof.

SECTION 3.11 Acceptance by Successor. Any successor escrow agent appointed as provided in this Agreement shall execute, acknowledge and deliver to the Issuer and to its predecessor an instrument accepting such appointment hereunder and agreeing to be bound by the terms hereof, and thereupon the resignation or removal of the predecessor shall become effective and such successor, without any further act, deed or conveyance, shall become vested with all the rights, powers, duties and obligations of its predecessor, with like effect as if originally named as Agent herein; but, nevertheless, on Written Request of the Issuer or the request of the successor, the predecessor shall execute and deliver an instrument transferring to such successor all rights, powers and escrow property of the predecessor. Upon request of any such successor, the Issuer shall execute any and all instruments in writing for more fully and certainly vesting in and confirming to such successor all such rights, powers and duties. No successor shall accept appointment as provided herein unless at the time of such acceptance such successor shall be eligible under the provisions of Section 3.8 hereof.

Any corporation into which the Agent may be merged or with which it may be consolidated, or any corporation resulting from any merger or consolidation to which the Agent shall be a party, or any corporation succeeding to the business of the Agent, shall be the successor of the Agent hereunder without the execution or filing of any paper or any further act on the part of any of the parties hereto, anything herein to the contrary notwithstanding, provided that such successor shall be eligible under the provisions of Section 3.8 hereof.

SECTION 3.12 Payment to Agent. The Issuer agrees to pay the Agent, as reasonable and proper compensation under this Agreement, an annual fee of \$ _____, payable on the date hereof and on each anniversary thereof until the term of this Agreement is concluded. The Agent shall be entitled to reimbursement of all advances, counsel fees and expenses, and other costs made or incurred by the Agent in connection with its services and/or its capacity as Agent or resulting therefrom. In addition, the Issuer agrees to pay to the Agent all out-of-pocket expenses and costs of the Agent incurred by the Agent in the performance of its duties hereunder, including all publication, mailing and other expenses associated with the redemption of the Outstanding Bonds; provided, however, that to the extent permitted by law, the Issuer agrees to indemnify the Agent and hold it harmless against any liability which it may incur while acting in good faith in its capacity as Agent under this Agreement, including, but not limited to, any court costs and attorneys' fees, and such indemnification, to the extent permitted by law, shall be paid from available funds of the Issuer and shall not give rise to any claim against the Escrow Fund.

ARTICLE IV. MISCELLANEOUS

SECTION 4.1 Amendments to this Agreement. This Agreement is made for the benefit of the Issuer, the holders from time to time for the Outstanding Bonds, and it shall not be repealed, revoked, altered or amended without the written consent of all such holders, the Agent and the Issuer; provided, however, that the Issuer and the Agent may, without the consent of, or notice to, such holders, enter into such agreements supplemental to this Agreement as shall not adversely affect the rights of such holders and as shall not be inconsistent with the terms and provisions of this Agreement, for any one or more of the following purposes:

- (a) to cure any ambiguity or formal defect or omission in this Agreement;

(b) to grant to, or confer upon, the Agent for the benefit of the holders of the Outstanding Bonds, any additional rights, remedies, powers or authority that may lawfully be granted to, or conferred upon, such holders or the Agent; and

(c) to subject to this Agreement additional funds, securities or properties.

The Agent shall be entitled to rely exclusively upon an unqualified opinion of nationally recognized bond counsel with respect to compliance with this Section, including the extent, if any, to which any change, modification, addition or elimination affects the rights of the holders of the Outstanding Bonds, or that any instrument executed hereunder complies with the conditions and provisions of this Section.

Notwithstanding the foregoing or any other provision of this Agreement, upon Written Request and upon compliance with the conditions hereinafter stated, the Agent shall have the power to and shall, in simultaneous transactions, sell, transfer, otherwise dispose of or request the redemption of the Government Securities held hereunder and to substitute therefor direct obligations of, or obligations the principal of and interest on which are fully guaranteed by the United States of America, subject to the condition that such monies or securities held by the Agent shall be sufficient to pay principal of and interest on the Outstanding Bonds. The Issuer hereby covenants and agrees that it will not request the Agent to exercise any of the powers described in the preceding sentence in any manner which will cause the Refunding Bonds to be arbitrage bonds within the meaning of Section 148 of the Code in effect on the date of such request and applicable to obligations issued on the issue date of the Refunding Bonds. The Agent shall purchase such substituted securities with the proceeds derived from the maturity, sale, transfer, disposition or redemption of the Government Securities held hereunder or from other monies available. The transactions may be effected only if there shall have been submitted to the Agent: (1) an independent verification by a nationally recognized independent certified public accounting firm concerning the adequacy of such substituted securities with respect to principal and the interest thereon and any other monies or securities held for such purpose to pay when due the principal of and interest on the Outstanding Bonds in the manner required by the proceedings which authorized their issuance; and (2) an opinion from nationally recognized bond counsel to the effect that the disposition and substitution or purchase of such securities will not, under the statutes, rules and regulations then in force and applicable to obligations issued on the date of issuance of the Refunding Bonds, cause the interest on the Refunding Bonds not to be exempt from Federal income taxation. Any surplus monies resulting from the sale, transfer, other disposition or redemption of the Government Securities held hereunder and the substitutions therefor of direct obligations of, or obligations the principal of and interest on which is fully guaranteed by, the United States of America, shall be released from the Escrow Fund and shall be transferred to the Issuer.

SECTION 4.2 Severability. If any provision of this Agreement shall be held or deemed to be invalid or shall, in fact, be illegal, inoperative or unenforceable, the same shall not affect any other provision or provisions herein contained or render the same invalid, inoperative or unenforceable to any extent whatever.

SECTION 4.3 Governing Law. This Agreement shall be governed and construed in accordance with the law of the State of Tennessee.

SECTION 4.4 Notices. Any notice, request, communication or other paper shall be sufficiently given and shall be deemed given when delivered or mailed by Registered or Certified Mail, postage prepaid, or sent by telegram as follows:

To the Issuer:

City of Oak Ridge, Tennessee
200 South Tulane Avenue
Oak Ridge, Tennessee 37831

To the Agent:

The Issuer and the Agent may designate in writing any further or different addresses to which subsequent notices, requests, communications or other papers shall be sent.

SECTION 4.5 Agreement Binding. All the covenants, promises and agreements in this Agreement contained by or on behalf of the parties shall bind and inure to the benefit of their respective successors and assigns, whether so expressed or not.

SECTION 4.6 Termination. This Agreement shall terminate when all transfers and payments required to be made by the Agent under the provisions hereof shall have been made.

SECTION 4.7 Execution by Counterparts. This Agreement may be executed in several counterparts, all or any of which shall be regarded for all purposes as one original and shall constitute and be but one and the same instrument.

(signature page follows)

IN WITNESS WHEREOF, the Issuer and the Agent have caused this Agreement to be executed all as of the day and date first above written.

CITY OF OAK RIDGE, TENNESSEE

By: _____
Mayor

City Clerk

Escrow Agent

By: _____
Title: _____

EXHIBIT B

Type of Security

Par Amount

Price

Interest Rate

Maturity Date

Total Cost of Securities: \$ _____
Initial Cash Deposit: \$ _____

EXHIBIT C

NOTICE OF REDEMPTION
CITY OF OAK RIDGE, TENNESSEE

NOTICE IS HEREBY GIVEN that the City of Oak Ridge, Tennessee (the "Issuer"), has elected to and does exercise its option to call and redeem on June 1, 2019 the Issuer's outstanding debt obligations (the "Outstanding Bonds") as follows:

**A portion of the
General Obligation Refunding Bonds, Series 2009,
dated February 3, 2009, maturing June 1, 2020 and thereafter**

<u>Maturity Date</u>	<u>Principal Amount</u>	<u>Interest Rate</u>	<u>Cusip No.</u>
----------------------	-------------------------	----------------------	------------------

The owners of the above-described Outstanding Bonds are hereby notified to present the same to the offices of _____ as follows, where redemption shall be made at the redemption price of par, plus interest accrued to the redemption date. The redemption price will become due and payable on June 1, 2019, upon each such Bond herein called for redemption and such Bond shall not bear interest beyond June 1, 2019.

Important Notice: Withholding of 28% of gross redemption proceeds of any payment made within the United States may be required by the Economic Growth and Tax Relief Reconciliation Act of 2003 (the "Act"), unless the Paying Agent has the correct taxpayer identification number (social security or employer identification number) or exemption certificate of the payee. Please furnish a properly completed W-9 or exemption certificate or equivalent when presenting your securities.

Registration and Paying Agent

EXHIBIT B

REPORT OF DIRECTOR OF STATE AND LOCAL FINANCE

23608952.1

CITY OF OAK RIDGE



POST OFFICE BOX 1 • OAK RIDGE, TENNESSEE 37831-0001

September 26, 2017

Ms. Sandi Thompson
Director of Office of State and Local Finance
Suite 1600, James K. Polk Building
505 Deaderick Street
Nashville, TN. 37243-1402

Re: City of Oak Ridge, Tennessee

Dear Ms. Thompson:

The City of Oak Ridge, Tennessee, (the "City") is pleased to enclose for your consideration a report entitled "Plan of Refunding". This report is being delivered to you to comply with Title 9, Chapter 21, Tennessee Code Annotated and your memo dated March 7, 2011.

Entity Information:

(A) City of Oak Ridge, Tennessee
200 South Tulane Avenue
Oak Ridge, TN 37830
Mayor Warren Gooch
City Manager Mark Watson – mwatson@oakridgetn.gov
Finance Director Janice McGinnis – JMcGinnis@oakridgetn.gov

(B) Contacts for additional information:
Financial Advisor:
Cumberland Securities Company, Inc.
Chris Bessler 865-988-2663
E-Mail address: chris.bessler@cumberlandsecurities.com

Bond Counsel:
Bass, Berry & Sims
Mark Mamantov 865-521-0365
E-Mail address: mmamantov@bassberry.com

Timing Information:

(A) Resolution is planned to be adopted by the City at its October 9, 2017 regular scheduled meeting.

Specific Request for:

(A) The City hereby requests a Report from the Office of State and Local Finance on the enclosed Plan of Refunding pursuant to Title 9, Chapter 21 Tennessee Code Annotated.

The City is proposing to refinance all or a portion of the City's outstanding General Obligation Refunding Bonds, Series 2009, dated February 3, 2009, maturing on June 1, 2020 and thereafter (the "Series 2009 Bonds" or the "Outstanding Debt").

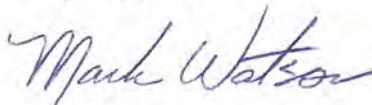
The enclosed Plan of Refunding outlines the projected structure based upon current market conditions. To maximize flexibility, the City's bond resolution will be drafted to authorize the refunding of all or any portion of the above referenced debt. Therefore, the final structure and sizing could vary from the enclosed request based on the final structure of the proposed Bonds.

The City Council is scheduled to meet on Monday, October 9, 2017 to discuss the Plan of Refunding and other documents related to this refinancing plan. The restoration of the debt to its prior term through 2030 provides additional funding capacity for planned capital projects, which include new utility billing and accounting software and SCADA in the near term. A refunding in today's low interest rate environment also has an estimated gross savings of approximately \$111,015 and a net present value of approximately \$391,250 or 5.6% of the refunded principal. In summary, the refunding provides capacity for the City to finance new capital projects that will provide better and more efficient service to our electric rate payers with minimal impact to utility rates.

In that regard, we appreciate you delivering your report on the refunding and permission on the amortization to the City on or before October 9, 2017, which is a regular scheduled Council meeting.

If you have any questions or need any additional information with respect to this financing, please do not hesitate to contact me or our Financial Advisor, Mr. Chris Bessler at Cumberland Securities Company, Inc. (865-988-2663) at your earliest convenience.

Very truly yours,



Mark Watson
City Manager

cc: Mr. Mark Mamantov
Mr. Chris Bessler

Enclosure

Plan of Refunding – City of Oak Ridge, Tennessee (the “City”)

- A) **Identification of Key Professionals (including financial advisors, bond counsel, underwriters, or lenders) who have provided advice or proposals on which the Entity relied to prepare the Plan):**
1. Financial Advisor: Cumberland Securities Company, Inc.
 2. Bond Counsel: Bass, Berry & Sims
 3. Underwriter: To be determined at Competitive Public Sale
- B) **Purpose(s) of Refunding, including parameters:**
1. **Cost Savings: include a projection of the savings and amortization schedules for both refunding and refunded debt:**
 - a. The City of Oak Ridge, TN (the “City”) anticipates a gross savings of approximately \$111,015 and a net present savings of approximately \$391,250 or 5.6% of the refunded principal.
 2. **Restructuring: provide a comparison of existing and proposed structures, describing why debt is being restructured:**
 - a. N/A
 3. **Covenant change: Clearly describe covenant to be eliminated or revised and any change in the structure: N/A**
 4. **Reduction or elimination of risk: describe risk to be reduced or eliminated:**
 - a. N/A
- C) **Statement that the proposed refunding complies with the Entity’s adopted debt management policy and a description of how the transaction is consistent with the policy, including any savings threshold. If there is no adopted policy or the transaction is not consistent, the Entity shall provide a detailed explanation.**
1. The proposed refunding is in compliance with the City’s adopted debt management policy due to the City realizing economic savings.
- D) **Other Information**
1. **Amortization schedules for both (proposed) refunding and (outstanding) debt to be refunded,**
 - a. Proposed refunding debt schedule: See attached page 3 of the Preliminary Refunding Analysis.
 - b. Outstanding debt schedule(s): See attached page 5 of the Preliminary Refunding Analysis.

As well as the following:
 2. **Refunding Debt:**
 - a. **Maximum size to be authorized by the governing body, identifying all outstanding debt that could be included in the refunding:**
 - i. Maximum size authorized by governing body = \$7,025,000
 - b. **Anticipated Size = \$6,920,000**
 - c. **Anticipated final maturity and weighted average maturity. If the final maturity is extended beyond the fiscal year of final maturity of debt to be refunded or the weighted average maturity is increased, list the projects as required below for refunded debt:**
 - i. **Final Maturity = 6/01/2030**
 - ii. **Weighted Average Maturity = 7.44Years**
 - d. **Breakdown of Costs of the Refunding:** See attached page 7 of the Preliminary Refunding Analysis

e. **Sources and Uses of Funds**

See attached page 6 of the Preliminary Refunding Analysis

3. **Refunded Debt: Information must be provided with respect to *each debt issue to be refunded*; (if all currently outstanding debt will not be refunded, identify maturities that are candidates for refunding).**

a. **Name of issue, type of debt, original terms, including whether the debt is federally tax-exempt or taxable.**

- i. General Obligation Refunding Bonds, Series 2009, dated February 3, 2009, maturing on June 1, 2020 and thereafter (the "Series 2009 Bonds" or the "Outstanding Debt"). The Series 2009 Bonds are tax-exempt, fixed rate debt with a final maturity on June 1, 2025.

b. **Date of issue and copy of CT-0253 filed.**

- i. Series 2009 Bonds: Date of Issue = 02/03/2009. The CT-0253 Form was filed with the Office of State and Local Finance in connection with the issuance of the Series 2009 Bonds and was not readily available as of the date of this report.

c. **Date of authorization by the governing body.**

- i. Series 2009 Bonds: 09/22/2008

d. **Whether bank-qualified or under other small issuer exception.**

- i. Series 2009 Bonds: No

e. **Projects funded with proceeds of issue and remaining average life of projects (if final maturity or weighted average maturity of debt is extended).**

- i. Series 2009 Bonds: The Series 2009 Bonds were issued for the purpose of providing funds to (prepay all or a portion of the City's outstanding Revenue Series II-E-1 Loan Agreement by and between the City and the Public Building Authority of Sevier County, Tennessee (the "Authority") dated April 1, 2001 (the "Series II-E-1 Loan") and to pay costs incurred in connection with the issuance and sale of the Series 2009 Bonds.
- ii. The Series 2009 Bonds shortened the amortization of the Series II-E-1 Loan from an original final maturity of June 1, 2030 to June 1, 2025. The proposed refunding bonds will extend the final maturity back out to June 1, 2030, though the estimated average debt service will be approximately \$475,000 less per year than the original budgeted debt service on the Series II-E-1 Loan due to the City having accelerated its payments over the last eight (8) years. None of the Outstanding Bonds will have their weighted average maturities extended and the remaining average life of all projects financed with the Outstanding Bonds exceeds the estimated weighted average life of the proposed refunding bonds.

f. **Derivative product, if any, and copy of Report of Compliance:** Not Applicable

CITY OF OAK RIDGE, TENNESSEE
Proposed Refunding of Series 2009 Bonds (Electric Portion)

Preliminary
Refunding
Analysis

September 26, 2017

Prepared By:



CUMBERLAND SECURITIES

SINCE 1931

Cumberland Securities Company, Inc.
Independent Registered Municipal Advisors
Knoxville, Tennessee
Telephone: (865) 988-2663
Facsimile: (865) 988-1863

* May not include all outstanding notes and leases, if any

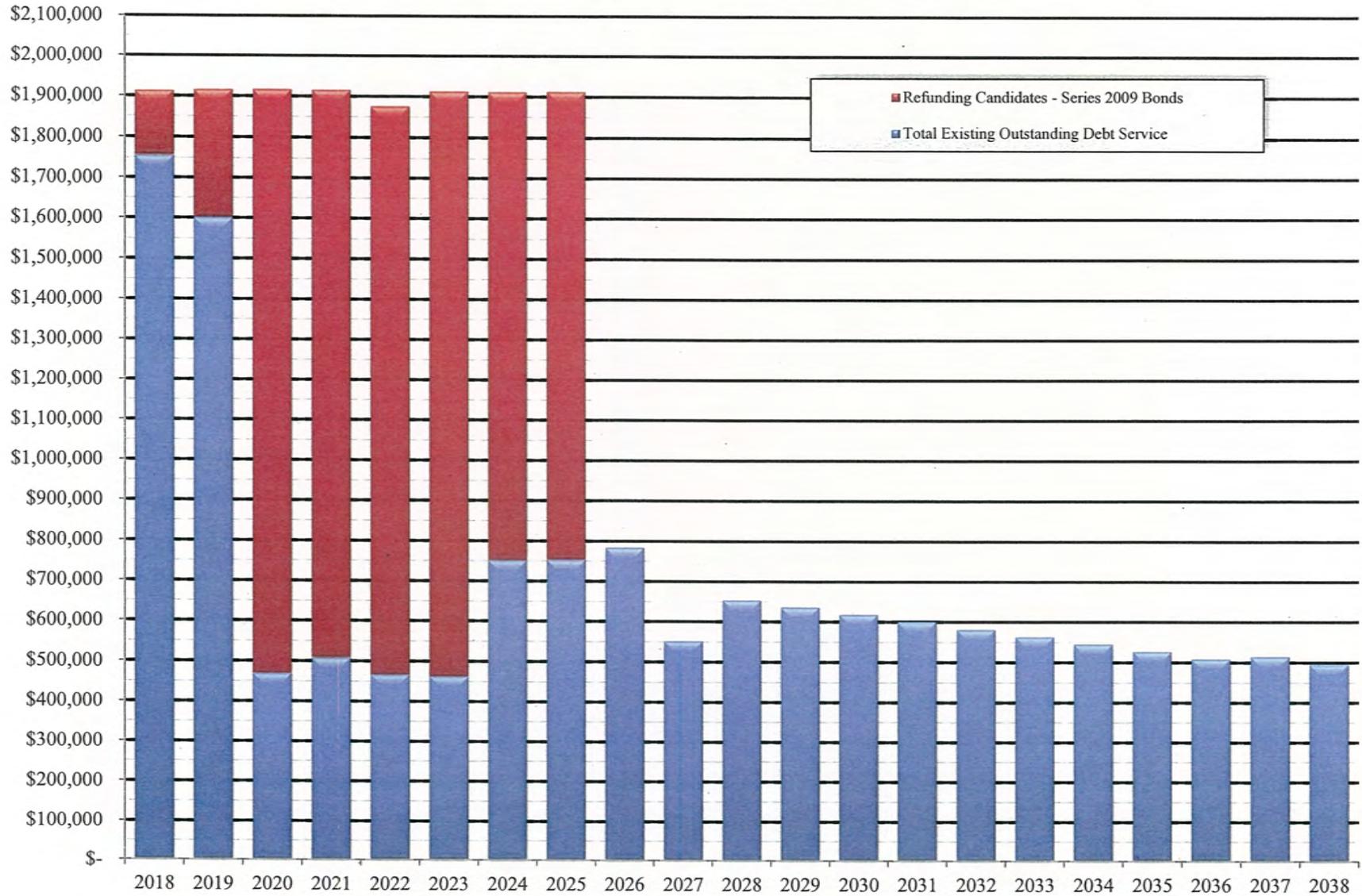
City of Oak Ridge, Tennessee

Preliminary Refunding Analysis

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City of Oak Ridge, Tennessee Total Outstanding Debt Service - Electric System





SAVINGS ANALYSIS

**City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017 (Electric System Portion)
Refunding of General Obligation Refunding Bonds, Series 2009 (Electric System Portion)**

Date	Principal	Coupon	Interest	Total P+I	Refunded D/S	Savings	Present Value to 10/31/2017 at 1.998982%
06/01/2018			68,658.52	68,658.52	314,443.76	(383,102.28)	(384,397.82)
06/01/2019			117,142.50	117,142.50	314,443.76	197,301.26	192,129.21
06/01/2020	725,000.00	0.900%	117,142.50	842,142.50	1,449,443.76	607,301.26	577,788.55
06/01/2021	690,000.00	1.000%	110,617.50	800,617.50	1,407,693.76	607,076.26	565,966.32
06/01/2022	740,000.00	1.150%	103,717.50	843,717.50	1,410,193.76	566,476.26	517,528.96
06/01/2023	750,000.00	1.300%	95,207.50	845,207.50	1,451,793.76	606,586.26	543,050.33
06/01/2024	470,000.00	1.450%	85,457.50	555,457.50	1,161,543.76	606,086.26	531,717.38
06/01/2025	475,000.00	1.600%	78,642.50	553,642.50	1,159,950.00	606,307.50	521,265.00
06/01/2026	455,000.00	1.900%	71,042.50	526,042.50		(526,042.50)	(443,755.57)
06/01/2027	695,000.00	2.100%	62,397.50	757,397.50		(757,397.50)	(626,172.86)
06/01/2028	605,000.00	2.300%	47,802.50	652,802.50		(652,802.50)	(529,046.62)
06/01/2029	640,000.00	2.500%	33,887.50	673,887.50		(673,887.50)	(535,317.43)
06/01/2030	675,000.00	2.650%	17,887.50	692,887.50		(692,887.50)	(539,504.71)
	6,920,000.00		1,009,603.52	7,929,603.52	8,669,506.32	111,015.28	391,250.74

Net Present Value Benefit	391,250.74
Net PV Benefit/ Refunded Principal	5.6134%
Dated	10/31/2017
First Coupon Date	06/01/2018
Weighted Average Maturity	7.44
Average Coupon	1.9598%
Bond Yield for Arbitrage Purpose	1.9989824%
True Interest Cost (TIC)	2.0576183%
Negative Arbitrage	69,588.69



ESTIMATED DEBT SERVICE

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017 (Electric System Portion)
Refunding of General Obligation Refunding Bonds, Series 2009 (Electric System Portion)

Date	Principal	Estimated Coupon	Interest	Total P+I	Fiscal Total
06/01/2018			68,658.52	68,658.52	68,658.52
12/01/2018			58,571.25	58,571.25	
06/01/2019			58,571.25	58,571.25	117,142.50
12/01/2019			58,571.25	58,571.25	
06/01/2020	725,000.00	0.900%	58,571.25	783,571.25	842,142.50
12/01/2020			55,308.75	55,308.75	
06/01/2021	690,000.00	1.000%	55,308.75	745,308.75	800,617.50
12/01/2021			51,858.75	51,858.75	
06/01/2022	740,000.00	1.150%	51,858.75	791,858.75	843,717.50
12/01/2022			47,603.75	47,603.75	
06/01/2023	750,000.00	1.300%	47,603.75	797,603.75	845,207.50
12/01/2023			42,728.75	42,728.75	
06/01/2024	470,000.00	1.450%	42,728.75	512,728.75	555,457.50
12/01/2024			39,321.25	39,321.25	
06/01/2025	475,000.00	1.600%	39,321.25	514,321.25	553,642.50
12/01/2025			35,521.25	35,521.25	
06/01/2026	455,000.00	1.900%	35,521.25	490,521.25	526,042.50
12/01/2026			31,198.75	31,198.75	
06/01/2027	695,000.00	2.100%	31,198.75	726,198.75	757,397.50
12/01/2027			23,901.25	23,901.25	
06/01/2028	605,000.00	2.300%	23,901.25	628,901.25	652,802.50
12/01/2028			16,943.75	16,943.75	
06/01/2029	640,000.00	2.500%	16,943.75	656,943.75	673,887.50
12/01/2029			8,943.75	8,943.75	
06/01/2030	675,000.00	2.650%	8,943.75	683,943.75	692,887.50
	6,920,000.00		1,009,603.52	7,929,603.52	

Date Structure

Date 10/31/2017
First Coupon Date 06/01/2018

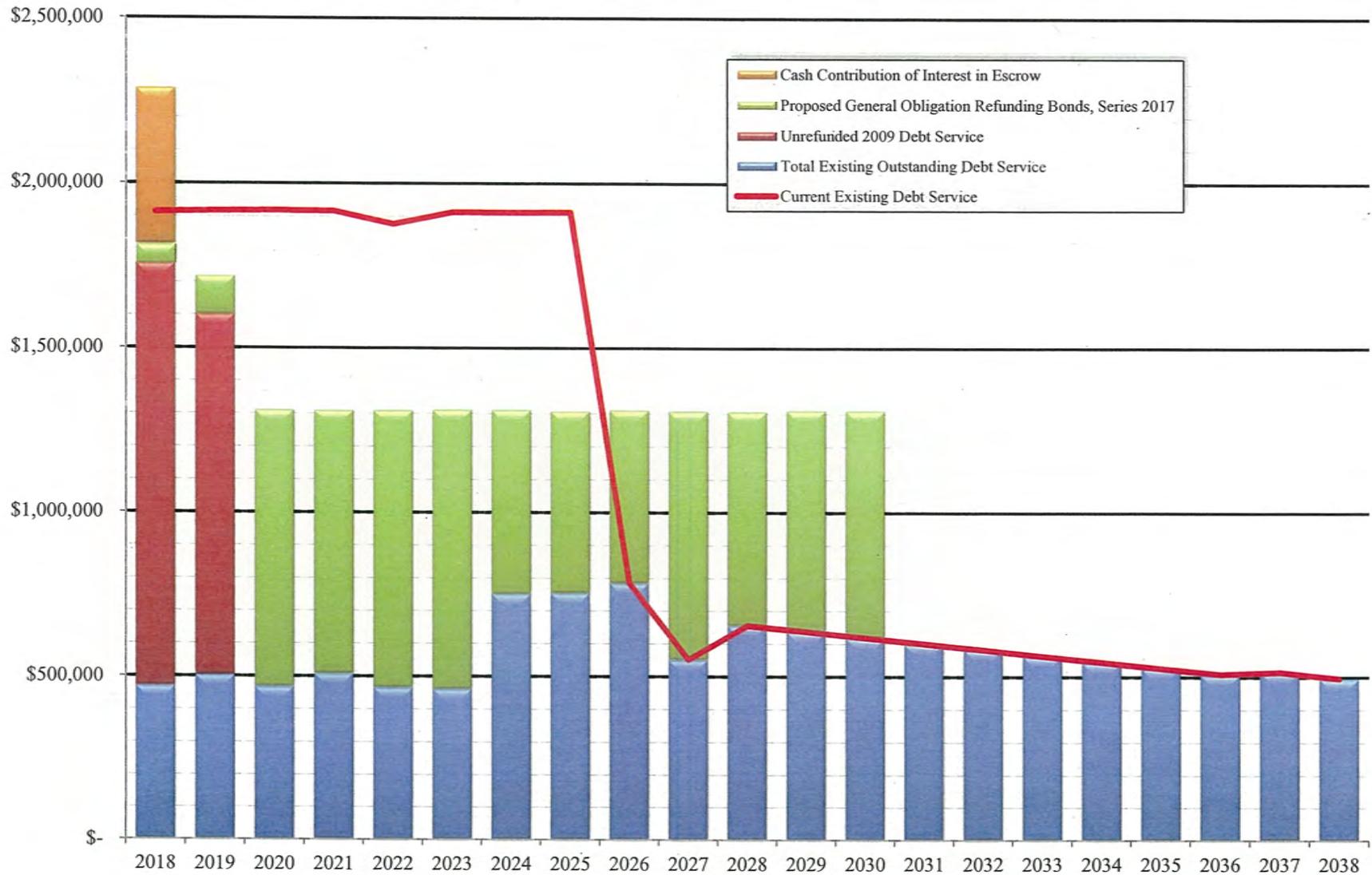
Yield Statistics

Average Coupon 1.9597905%
Weighted Average Maturity 7.444
True Interest Cost (TIC) 2.0576183%

City of Oak Ridge, Tennessee

Total Outstanding Debt Service - Electric System

Estimated Outstanding Debt Service - Post 2017 Refunding (Excludes New Money)





DEBT SERVICE TO MATURITY AND TO CALL

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2009 (Electric System Portion)

Date	Refunded Bonds	Refunded Interest	D/S To Call	Principal	Coupon	Interest	Refunded D/S
12/01/2017		157,221.88	157,221.88			157,221.88	157,221.88
06/01/2018		157,221.88	157,221.88			157,221.88	157,221.88
12/01/2018		157,221.88	157,221.88			157,221.88	157,221.88
06/01/2019	6,970,000.00	157,221.88	7,127,221.88			157,221.88	157,221.88
12/01/2019						157,221.88	157,221.88
06/01/2020				1,135,000.00	5.000%	157,221.88	1,292,221.88
12/01/2020						128,846.88	128,846.88
06/01/2021				1,150,000.00	5.000%	128,846.88	1,278,846.88
12/01/2021						100,096.88	100,096.88
06/01/2022				1,210,000.00	4.000%	100,096.88	1,310,096.88
12/01/2022						75,896.88	75,896.88
06/01/2023				1,300,000.00	4.250%	75,896.88	1,375,896.88
12/01/2023						48,271.88	48,271.88
06/01/2024				1,065,000.00	4.375%	48,271.88	1,113,271.88
12/01/2024						24,975.00	24,975.00
06/01/2025				1,110,000.00	4.500%	24,975.00	1,134,975.00
	6,970,000.00	628,887.52	7,598,887.52	6,970,000.00		1,699,506.32	8,669,506.32

Yield Statistics

Base date for Avg. Life & Avg. Coupon Calculation	10/31/2017
Average Life	5.065
Average Coupon	4.8137571%
Weighted Average Maturity (Par Basis)	5.065

Refunding Bond Information

Refunding Dated Date	10/31/2017
Refunding Delivery Date	10/31/2017



SOURCES AND USES OF FUNDS

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Dated Date 10/31/2017
Delivery Date 10/31/2017

	General Obligation Refunding Bonds, Series 2017 (Electric System Portion)
Sources:	
Bond Proceeds:	
Par Amount	6,920,000.00
Other Sources of Funds:	
Issuer Contribution	628,887.52
	<u>7,548,887.52</u>

	General Obligation Refunding Bonds, Series 2017 (Electric System Portion)
Uses:	
Refunding Escrow Deposits:	
Cash Deposit	0.27
SLGS Purchases	<u>7,441,680.00</u>
	7,441,680.27
Delivery Date Expenses:	
Cost of Issuance	53,231.65
Underwriter's Discount:	
Underwriter's Discount (Awarded to Lowest Bidder)	53,975.60
	<u>7,548,887.52</u>



COST OF ISSUANCE

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Cost of Issuance	\$/1000	Amount
Financial Advisor	3.53523	24,463.82
Bond Counsel	1.88546	13,047.38
Rating Agency	1.41409	9,785.53
Paying Agent	0.05656	391.42
POS/Official Statement	0.23568	1,630.92
Advertising	0.04714	326.19
Miscellaneous	0.23545	1,629.29
Escrow Agent Bidding Fee (If Needed)	0.16498	1,141.65
Accounting Fees	0.11784	815.45
	<hr/>	<hr/>
	7.69243	53,231.65



ESCROW CASH FLOW

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Date	Principal	Interest	Net Escrow Receipts	Present Value to 10/31/2017 @ 1.3768385%
12/01/2017	148,709.00	8,513.04	157,222.04	157,036.38
06/01/2018	106,915.00	50,307.28	157,222.28	155,962.95
12/01/2018	107,675.00	49,546.10	157,221.10	154,895.44
06/01/2019	7,078,381.00	48,840.83	7,127,221.83	6,973,785.23
	7,441,680.00	157,207.25	7,598,887.25	7,441,680.00

Escrow Cost Summary

Purchase date	10/31/2017
Purchase cost of securities	7,441,680.00
Target for yield calculation	7,441,680.00



ESCROW COST

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Type of Security	Maturity Date	Par Amount	Rate	Total Cost
SLGS	12/01/2017	148,709	0.950%	148,709.00
SLGS	06/01/2018	106,915	1.220%	106,915.00
SLGS	12/01/2018	107,675	1.310%	107,675.00
SLGS	06/01/2019	7,078,381	1.380%	7,078,381.00
			7,441,680	7,441,680.00

Purchase Date	Cost of Securities	Cash Deposit	Total Escrow Cost	Yield
10/31/2017	7,441,680	0.27	7,441,680.27	1.376838%
		7,441,680	0.27	7,441,680.27



ESCROW DESCRIPTIONS

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Type of Security	Type of SLGS	Maturity Date	First Int Pmt Date	Par Amount	Rate	Max Rate	Total Cost
Oct 31, 2017:							
SLGS	Certificate	12/01/2017	12/01/2017	148,709	0.950%	0.950%	148,709.00
SLGS	Certificate	06/01/2018	06/01/2018	106,915	1.220%	1.220%	106,915.00
SLGS	Note	12/01/2018	12/01/2017	107,675	1.310%	1.310%	107,675.00
SLGS	Note	06/01/2019	12/01/2017	7,078,381	1.380%	1.380%	7,078,381.00
				7,441,680			7,441,680.00

SLGS Summary

SLGS Rates File	25SEP17
Total Certificates of Indebtedness	255,624.00
Total Notes	7,186,056.00
Total original SLGS	7,441,680.00



ESCROW REQUIREMENTS

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Period Ending	Interest	Principal Redeemed	Total
12/01/2017	157,221.88		157,221.88
06/01/2018	157,221.88		157,221.88
12/01/2018	157,221.88		157,221.88
06/01/2019	157,221.88	6,970,000.00	7,127,221.88
	628,887.52	6,970,000.00	7,598,887.52



ESCROW STATISTICS

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Escrow	Total Escrow Cost	Modified Duration (years)	Yield to Receipt Date	Yield to Disbursement Date	Perfect Escrow Cost	Value of Negative Arbitrage	Cost of Dead Time
General Obligation Refunding Bonds, Series 2017 (Electric System Portion), Global Proceeds Escrow:							
	7,441,680.27	1.513	1.376838%	1.376838%	7,372,091.57	69,588.69	0.01
	7,441,680.27				7,372,091.57	69,588.69	0.01

Delivery date 10/31/2017
Arbitrage yield 1.998982%



ESCROW SUFFICIENCY

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Date	Escrow Requirement	Net Escrow Receipts	Excess Receipts	Excess Balance
10/31/2017		0.27	0.27	0.27
12/01/2017	157,221.88	157,222.04	0.16	0.43
06/01/2018	157,221.88	157,222.28	0.40	0.83
12/01/2018	157,221.88	157,221.10	(0.78)	0.05
06/01/2019	7,127,221.88	7,127,221.83	(0.05)	
	7,598,887.52	7,598,887.52	0.00	



UNREFUNDED BOND DEBT SERVICE

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2009 (Electric System Portion)

Dated Date 10/31/2017
Delivery Date 10/31/2017

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service	Bond Balance	Total Bond Value
10/31/2017						2,100,000	2,100,000
12/01/2017			42,000	42,000		2,100,000	2,100,000
06/01/2018	1,045,000	4.000%	42,000	1,087,000	1,129,000	1,055,000	1,055,000
12/01/2018			21,100	21,100		1,055,000	1,055,000
06/01/2019	1,055,000	4.000%	21,100	1,076,100	1,097,200		
	2,100,000		126,200	2,226,200	2,226,200		

CITY OF OAK RIDGE, TENNESSEE
Proposed Refunding of Series 2009 Bonds (Electric Portion)
& New Money

Preliminary
Funding & Refunding
Analysis

September 25, 2017

Prepared By:



CUMBERLAND SECURITIES

SINCE 1931

Cumberland Securities Company, Inc.
Independent Registered Municipal Advisors
Knoxville, Tennessee
Telephone: (865) 988-2663
Facsimile: (865) 988-1863

* May not include all outstanding notes and leases, if any

City of Oak Ridge, Tennessee

Preliminary Refunding Analysis

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ESTIMATED DEBT SERVICE

City of Oak Ridge, Tennessee General Obligation Refunding Bonds, Series 2017

Date	Principal	Estimated Coupon	Interest	Total P+I	Fiscal Total
06/01/2018			212,729.03	212,729.03	212,729.03
12/01/2018			181,475.00	181,475.00	
06/01/2019	735,000.00	0.800%	181,475.00	916,475.00	1,097,950.00
12/01/2019			178,535.00	178,535.00	
06/01/2020	1,890,000.00	0.900%	178,535.00	2,068,535.00	2,247,070.00
12/01/2020			170,030.00	170,030.00	
06/01/2021	1,870,000.00	1.000%	170,030.00	2,040,030.00	2,210,060.00
12/01/2021			160,680.00	160,680.00	
06/01/2022	1,935,000.00	1.150%	160,680.00	2,095,680.00	2,256,360.00
12/01/2022			149,553.75	149,553.75	
06/01/2023	1,950,000.00	1.300%	149,553.75	2,099,553.75	2,249,107.50
12/01/2023			136,878.75	136,878.75	
06/01/2024	1,690,000.00	1.450%	136,878.75	1,826,878.75	1,963,757.50
12/01/2024			124,626.25	124,626.25	
06/01/2025	1,710,000.00	1.600%	124,626.25	1,834,626.25	1,959,252.50
12/01/2025			110,946.25	110,946.25	
06/01/2026	1,710,000.00	1.900%	110,946.25	1,820,946.25	1,931,892.50
12/01/2026			94,701.25	94,701.25	
06/01/2027	1,975,000.00	2.100%	94,701.25	2,069,701.25	2,164,402.50
12/01/2027			73,963.75	73,963.75	
06/01/2028	1,915,000.00	2.300%	73,963.75	1,988,963.75	2,062,927.50
12/01/2028			51,941.25	51,941.25	
06/01/2029	1,115,000.00	2.500%	51,941.25	1,166,941.25	1,218,882.50
12/01/2029			38,003.75	38,003.75	
06/01/2030	1,165,000.00	2.650%	38,003.75	1,203,003.75	1,241,007.50
12/01/2030			22,567.50	22,567.50	
06/01/2031	505,000.00	2.800%	22,567.50	527,567.50	550,135.00
12/01/2031			15,497.50	15,497.50	
06/01/2032	515,000.00	2.850%	15,497.50	530,497.50	545,995.00
12/01/2032			8,158.75	8,158.75	
06/01/2033	535,000.00	3.050%	8,158.75	543,158.75	551,317.50
	21,215,000.00		3,247,846.53	24,462,846.53	

Date Structure

Date	10/31/2017
First Coupon Date	06/01/2018

Yield Statistics

Average Coupon	2.0196877%
Weighted Average Maturity	7.580
True Interest Cost (TIC)	2.1120949%



ESTIMATED DEBT SERVICE

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017 (Electric System Portion of Refunding)
Refunding of General Obligation Refunding Bonds, Series 2009 (Electric System Portion)

Date	Principal	Estimated Coupon	Interest	Total P+I	Fiscal Total
06/01/2018			68,658.52	68,658.52	68,658.52
12/01/2018			58,571.25	58,571.25	
06/01/2019			58,571.25	58,571.25	117,142.50
12/01/2019			58,571.25	58,571.25	
06/01/2020	725,000.00	0.900%	58,571.25	783,571.25	842,142.50
12/01/2020			55,308.75	55,308.75	
06/01/2021	690,000.00	1.000%	55,308.75	745,308.75	800,617.50
12/01/2021			51,858.75	51,858.75	
06/01/2022	740,000.00	1.150%	51,858.75	791,858.75	843,717.50
12/01/2022			47,603.75	47,603.75	
06/01/2023	750,000.00	1.300%	47,603.75	797,603.75	845,207.50
12/01/2023			42,728.75	42,728.75	
06/01/2024	470,000.00	1.450%	42,728.75	512,728.75	555,457.50
12/01/2024			39,321.25	39,321.25	
06/01/2025	475,000.00	1.600%	39,321.25	514,321.25	553,642.50
12/01/2025			35,521.25	35,521.25	
06/01/2026	455,000.00	1.900%	35,521.25	490,521.25	526,042.50
12/01/2026			31,198.75	31,198.75	
06/01/2027	695,000.00	2.100%	31,198.75	726,198.75	757,397.50
12/01/2027			23,901.25	23,901.25	
06/01/2028	605,000.00	2.300%	23,901.25	628,901.25	652,802.50
12/01/2028			16,943.75	16,943.75	
06/01/2029	640,000.00	2.500%	16,943.75	656,943.75	673,887.50
12/01/2029			8,943.75	8,943.75	
06/01/2030	675,000.00	2.650%	8,943.75	683,943.75	692,887.50
	6,920,000.00		1,009,603.52	7,929,603.52	

Date Structure

Date 10/31/2017
First Coupon Date 06/01/2018

Yield Statistics

Average Coupon 1.9597905%
Weighted Average Maturity 7.444
True Interest Cost (TIC) 2.0576184%



ESTIMATED DEBT SERVICE

City of Oak Ridge, Tennessee General Obligation Bonds, Series 2017 (Radio System)

Date	Principal	Estimated Coupon	Interest	Total P+I	Fiscal Total
06/01/2018			28,870.37	28,870.37	28,870.37
12/01/2018			24,628.75	24,628.75	
06/01/2019	320,000.00	0.800%	24,628.75	344,628.75	369,257.50
12/01/2019			23,348.75	23,348.75	
06/01/2020	320,000.00	0.900%	23,348.75	343,348.75	366,697.50
12/01/2020			21,908.75	21,908.75	
06/01/2021	325,000.00	1.000%	21,908.75	346,908.75	368,817.50
12/01/2021			20,283.75	20,283.75	
06/01/2022	330,000.00	1.150%	20,283.75	350,283.75	370,567.50
12/01/2022			18,386.25	18,386.25	
06/01/2023	330,000.00	1.300%	18,386.25	348,386.25	366,772.50
12/01/2023			16,241.25	16,241.25	
06/01/2024	335,000.00	1.450%	16,241.25	351,241.25	367,482.50
12/01/2024			13,812.50	13,812.50	
06/01/2025	340,000.00	1.600%	13,812.50	353,812.50	367,625.00
12/01/2025			11,092.50	11,092.50	
06/01/2026	345,000.00	1.900%	11,092.50	356,092.50	367,185.00
12/01/2026			7,815.00	7,815.00	
06/01/2027	350,000.00	2.100%	7,815.00	357,815.00	365,630.00
12/01/2027			4,140.00	4,140.00	
06/01/2028	360,000.00	2.300%	4,140.00	364,140.00	368,280.00
	3,355,000.00		352,185.37	3,707,185.37	

Date Structure

Date 10/31/2017
First Coupon Date 06/01/2018

Yield Statistics

Average Coupon 1.6955300%
Weighted Average Maturity 6.191
True Interest Cost (TIC) 1.8189662%



ESTIMATED DEBT SERVICE

City of Oak Ridge, Tennessee
General Obligation Bonds, Series 2017 (ESCO)

Date	Principal	Estimated Coupon	Interest	Total P+I	Fiscal Total
06/01/2018			67,027.67	67,027.67	67,027.67
12/01/2018			57,180.00	57,180.00	
06/01/2019	355,000.00	0.800%	57,180.00	412,180.00	469,360.00
12/01/2019			55,760.00	55,760.00	
06/01/2020	355,000.00	0.900%	55,760.00	410,760.00	466,520.00
12/01/2020			54,162.50	54,162.50	
06/01/2021	360,000.00	1.000%	54,162.50	414,162.50	468,325.00
12/01/2021			52,362.50	52,362.50	
06/01/2022	365,000.00	1.150%	52,362.50	417,362.50	469,725.00
12/01/2022			50,263.75	50,263.75	
06/01/2023	365,000.00	1.300%	50,263.75	415,263.75	465,527.50
12/01/2023			47,891.25	47,891.25	
06/01/2024	370,000.00	1.450%	47,891.25	417,891.25	465,782.50
12/01/2024			45,208.75	45,208.75	
06/01/2025	375,000.00	1.600%	45,208.75	420,208.75	465,417.50
12/01/2025			42,208.75	42,208.75	
06/01/2026	385,000.00	1.900%	42,208.75	427,208.75	469,417.50
12/01/2026			38,551.25	38,551.25	
06/01/2027	390,000.00	2.100%	38,551.25	428,551.25	467,102.50
12/01/2027			34,456.25	34,456.25	
06/01/2028	400,000.00	2.300%	34,456.25	434,456.25	468,912.50
12/01/2028			29,856.25	29,856.25	
06/01/2029	405,000.00	2.500%	29,856.25	434,856.25	464,712.50
12/01/2029			24,793.75	24,793.75	
06/01/2030	420,000.00	2.650%	24,793.75	444,793.75	469,587.50
12/01/2030			19,228.75	19,228.75	
06/01/2031	430,000.00	2.800%	19,228.75	449,228.75	468,457.50
12/01/2031			13,208.75	13,208.75	
06/01/2032	440,000.00	2.850%	13,208.75	453,208.75	466,417.50
12/01/2032			6,938.75	6,938.75	
06/01/2033	455,000.00	3.050%	6,938.75	461,938.75	468,877.50
	5,870,000.00		1,211,170.17	7,081,170.17	

Date Structure

Date 10/31/2017
First Coupon Date 06/01/2018

Yield Statistics

Average Coupon 2.3124759%
Weighted Average Maturity 8.923
True Interest Cost (TIC) 2.3868953%



ESTIMATED DEBT SERVICE

City of Oak Ridge, Tennessee
General Obligation Bonds, Series 2017 (Software)

Date	Principal	Estimated Coupon	Interest	Total P+I	Fiscal Total
06/01/2018			36,571.87	36,571.87	36,571.87
12/01/2018			31,198.75	31,198.75	
06/01/2019			31,198.75	31,198.75	62,397.50
12/01/2019			31,198.75	31,198.75	
06/01/2020	430,000.00	0.900%	31,198.75	461,198.75	492,397.50
12/01/2020			29,263.75	29,263.75	
06/01/2021	435,000.00	1.000%	29,263.75	464,263.75	493,527.50
12/01/2021			27,088.75	27,088.75	
06/01/2022	435,000.00	1.150%	27,088.75	462,088.75	489,177.50
12/01/2022			24,587.50	24,587.50	
06/01/2023	440,000.00	1.300%	24,587.50	464,587.50	489,175.00
12/01/2023			21,727.50	21,727.50	
06/01/2024	450,000.00	1.450%	21,727.50	471,727.50	493,455.00
12/01/2024			18,465.00	18,465.00	
06/01/2025	455,000.00	1.600%	18,465.00	473,465.00	491,930.00
12/01/2025			14,825.00	14,825.00	
06/01/2026	460,000.00	1.900%	14,825.00	474,825.00	489,650.00
12/01/2026			10,455.00	10,455.00	
06/01/2027	470,000.00	2.100%	10,455.00	480,455.00	490,910.00
12/01/2027			5,520.00	5,520.00	
06/01/2028	480,000.00	2.300%	5,520.00	485,520.00	491,040.00
	4,055,000.00		465,231.87	4,520,231.87	

Date Structure

Date 10/31/2017
First Coupon Date 06/01/2018

Yield Statistics

Average Coupon 1.7182013%
Weighted Average Maturity 6.677
True Interest Cost (TIC) 1.8306735%



ESTIMATED DEBT SERVICE

City of Oak Ridge, Tennessee
General Obligation Bonds, Series 2017 (Pre-School)

Date	Principal	Estimated Coupon	Interest	Total P+I	Fiscal Total
06/01/2018			11,600.60	11,600.60	11,600.60
12/01/2018			9,896.25	9,896.25	
06/01/2019	60,000.00	0.800%	9,896.25	69,896.25	79,792.50
12/01/2019			9,656.25	9,656.25	
06/01/2020	60,000.00	0.900%	9,656.25	69,656.25	79,312.50
12/01/2020			9,386.25	9,386.25	
06/01/2021	60,000.00	1.000%	9,386.25	69,386.25	78,772.50
12/01/2021			9,086.25	9,086.25	
06/01/2022	65,000.00	1.150%	9,086.25	74,086.25	83,172.50
12/01/2022			8,712.50	8,712.50	
06/01/2023	65,000.00	1.300%	8,712.50	73,712.50	82,425.00
12/01/2023			8,290.00	8,290.00	
06/01/2024	65,000.00	1.450%	8,290.00	73,290.00	81,580.00
12/01/2024			7,818.75	7,818.75	
06/01/2025	65,000.00	1.600%	7,818.75	72,818.75	80,637.50
12/01/2025			7,298.75	7,298.75	
06/01/2026	65,000.00	1.900%	7,298.75	72,298.75	79,597.50
12/01/2026			6,681.25	6,681.25	
06/01/2027	70,000.00	2.100%	6,681.25	76,681.25	83,362.50
12/01/2027			5,946.25	5,946.25	
06/01/2028	70,000.00	2.300%	5,946.25	75,946.25	81,892.50
12/01/2028			5,141.25	5,141.25	
06/01/2029	70,000.00	2.500%	5,141.25	75,141.25	80,282.50
12/01/2029			4,266.25	4,266.25	
06/01/2030	70,000.00	2.650%	4,266.25	74,266.25	78,532.50
12/01/2030			3,338.75	3,338.75	
06/01/2031	75,000.00	2.800%	3,338.75	78,338.75	81,677.50
12/01/2031			2,288.75	2,288.75	
06/01/2032	75,000.00	2.850%	2,288.75	77,288.75	79,577.50
12/01/2032			1,220.00	1,220.00	
06/01/2033	80,000.00	3.050%	1,220.00	81,220.00	82,440.00
	1,015,000.00		209,655.60	1,224,655.60	

Date Structure

Date	10/31/2017
First Coupon Date	06/01/2018

Yield Statistics

Average Coupon	2.3115529%
Weighted Average Maturity	8.936
True Interest Cost (TIC)	2.3964325%



SOURCES AND USES OF FUNDS

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Dated Date 10/31/2017
Delivery Date 10/31/2017

Sources:	General Obligation Refunding Bonds, Series 2017 (Electric System Portion of Refunding)	General Obligation Bonds, Series 2017 (Radio System)	General Obligation Bonds, Series 2017 (ESCO)	General Obligation Bonds, Series 2017 (Software)	General Obligation Bonds, Series 2017 (Pre-School)	Total
Bond Proceeds: Par Amount	6,920,000.00	3,355,000.00	5,870,000.00	4,055,000.00	1,015,000.00	21,215,000.00
Other Sources of Funds: Issuer Contribution	628,887.52					628,887.52
	7,548,887.52	3,355,000.00	5,870,000.00	4,055,000.00	1,015,000.00	21,843,887.52

Uses:	General Obligation Refunding Bonds, Series 2017 (Electric System Portion of Refunding)	General Obligation Bonds, Series 2017 (Radio System)	General Obligation Bonds, Series 2017 (ESCO)	General Obligation Bonds, Series 2017 (Software)	General Obligation Bonds, Series 2017 (Pre-School)	Total
Project Fund Deposits: Project Fund		3,303,313.85	5,778,203.71	3,993,126.45	998,281.62	14,072,925.63
Refunding Escrow Deposits: Cash Deposit	0.27					0.27
SLGS Purchases	7,441,680.00					7,441,680.00
	7,441,680.27					7,441,680.27
Delivery Date Expenses: Cost of Issuance	53,231.64	25,808.10	45,154.60	31,192.83	7,807.83	163,195.00
Underwriter's Discount: Underwriter's Discount (Awarded to Lowest Bidder)	53,975.61	25,878.05	46,641.69	30,680.72	8,910.55	166,086.62
	7,548,887.52	3,355,000.00	5,870,000.00	4,055,000.00	1,015,000.00	21,843,887.52

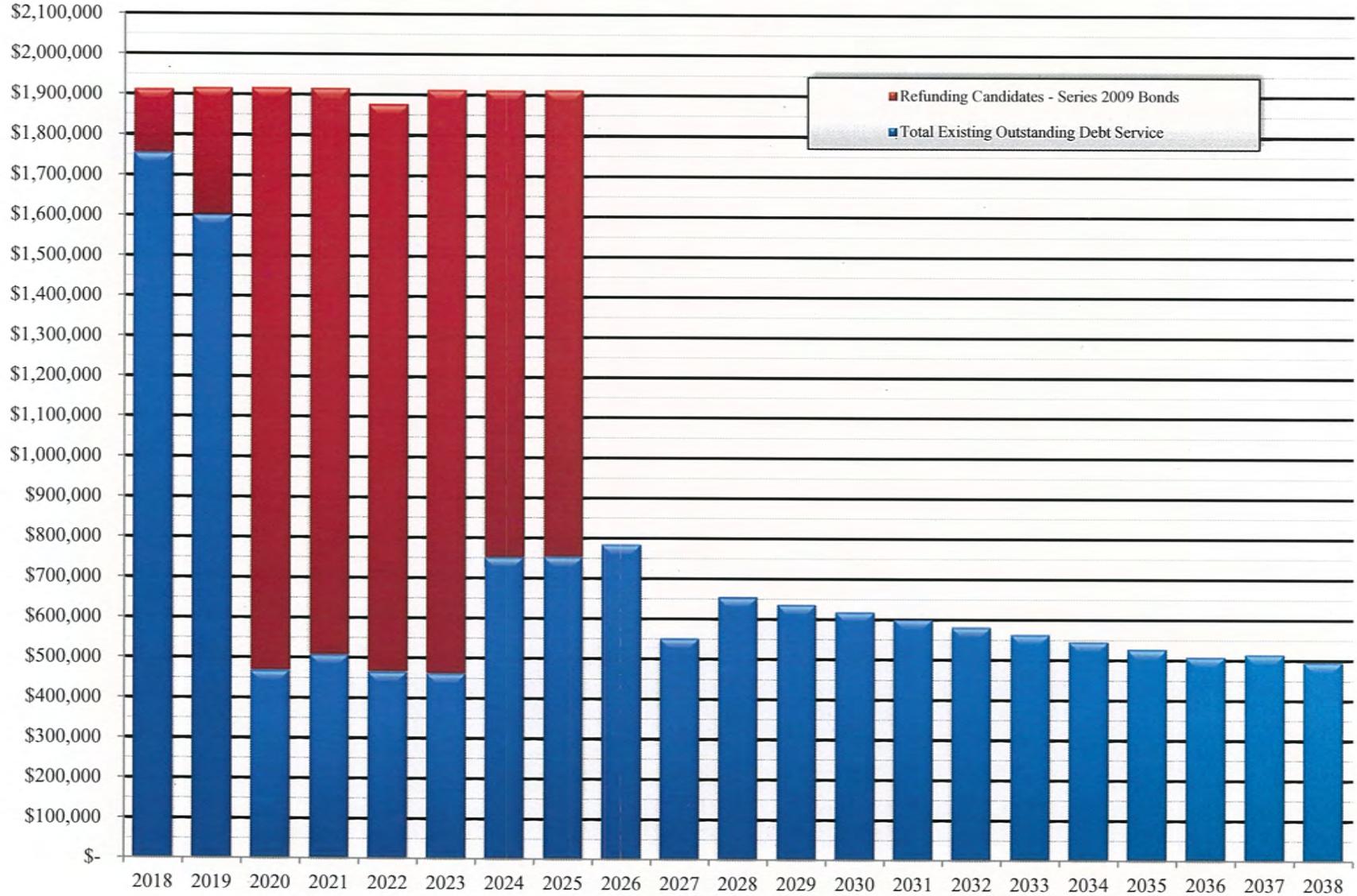


COST OF ISSUANCE

**City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017**

Cost of Issuance	S/1000	Amount
Financial Advisor	3.53523	75,000.00
Bond Counsel	1.88546	40,000.00
Rating Agency	1.41409	30,000.00
Paying Agent	0.05656	1,200.00
POS/Official Statement	0.23568	5,000.00
Advertising	0.04714	1,000.00
Miscellaneous	0.23545	4,995.00
Escrow Agent Bidding Fee (If Needed)	0.16498	3,500.00
Accounting Fees	0.11784	2,500.00
	7.69243	163,195.00

City of Oak Ridge, Tennessee Total Outstanding Debt Service - Electric System





SAVINGS ANALYSIS

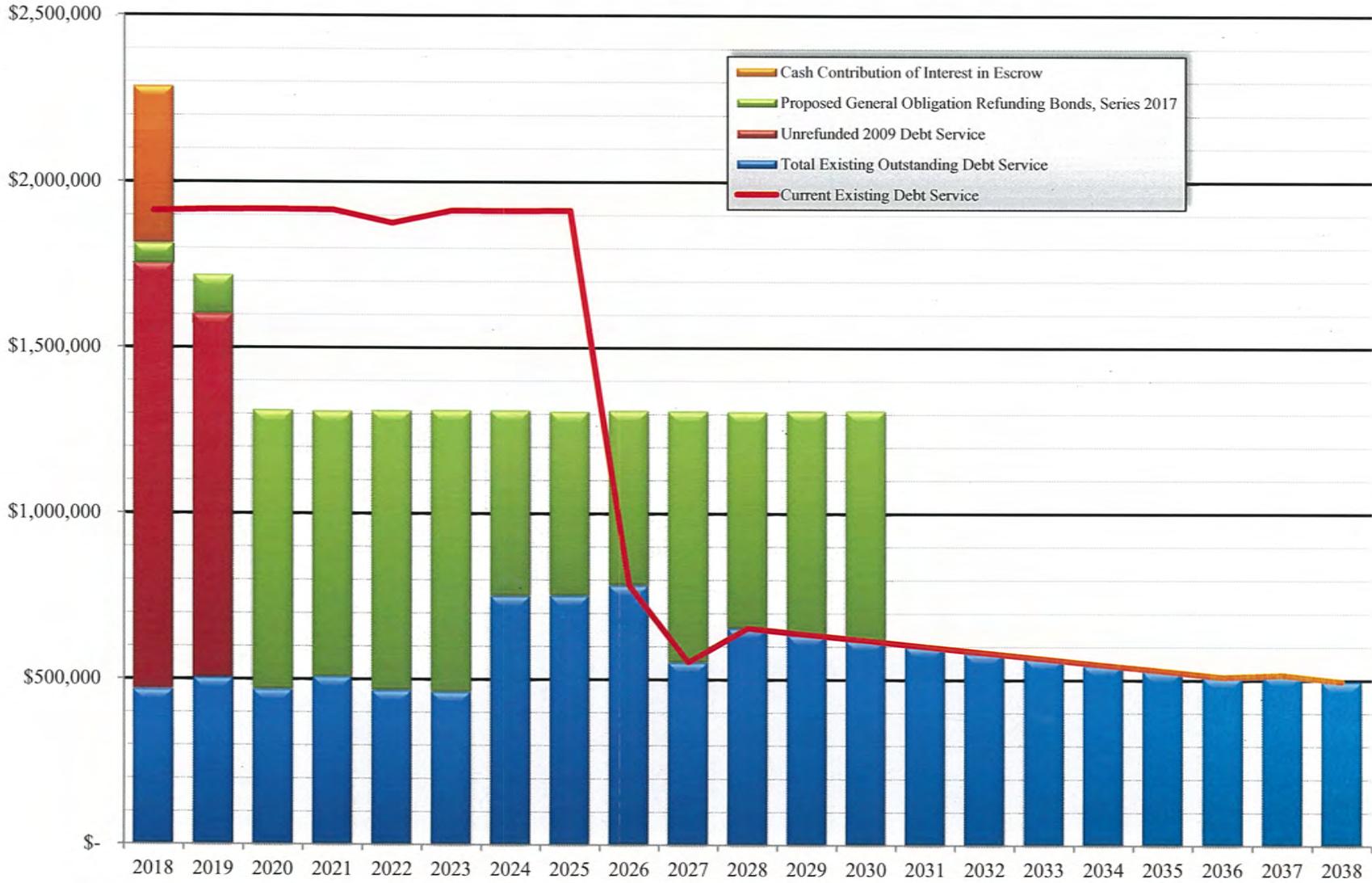
City of Oak Ridge, Tennessee

General Obligation Refunding Bonds, Series 2017 (Electric System Portion of Refunding)
Refunding of General Obligation Refunding Bonds, Series 2009 (Electric System Portion)

Date	Principal	Coupon	Interest	Total P+I	Refunded D/S	Savings	Present Value to 10/31/2017 at 1.998982%
06/01/2018			68,658.52	68,658.52	314,443.76	(383,102.28)	(384,397.82)
06/01/2019			117,142.50	117,142.50	314,443.76	197,301.26	192,129.21
06/01/2020	725,000.00	0.900%	117,142.50	842,142.50	1,449,443.76	607,301.26	577,788.55
06/01/2021	690,000.00	1.000%	110,617.50	800,617.50	1,407,693.76	607,076.26	565,966.32
06/01/2022	740,000.00	1.150%	103,717.50	843,717.50	1,410,193.76	566,476.26	517,528.96
06/01/2023	750,000.00	1.300%	95,207.50	845,207.50	1,451,793.76	606,586.26	543,050.33
06/01/2024	470,000.00	1.450%	85,457.50	555,457.50	1,161,543.76	606,086.26	531,717.38
06/01/2025	475,000.00	1.600%	78,642.50	553,642.50	1,159,950.00	606,307.50	521,265.00
06/01/2026	455,000.00	1.900%	71,042.50	526,042.50		(526,042.50)	(443,755.57)
06/01/2027	695,000.00	2.100%	62,397.50	757,397.50		(757,397.50)	(626,172.86)
06/01/2028	605,000.00	2.300%	47,802.50	652,802.50		(652,802.50)	(529,046.62)
06/01/2029	640,000.00	2.500%	33,887.50	673,887.50		(673,887.50)	(535,317.43)
06/01/2030	675,000.00	2.650%	17,887.50	692,887.50		(692,887.50)	(539,504.71)
	6,920,000.00		1,009,603.52	7,929,603.52	8,669,506.32	111,015.28	391,250.74

Net Present Value Benefit	391,250.74
Net PV Benefit/ Refunded Principal	5.6134%
Dated	10/31/2017
First Coupon Date	06/01/2018
Weighted Average Maturity	7.44
Average Coupon	1.9598%
Bond Yield for Arbitrage Purpose	1.9989824%
True Interest Cost (TIC)	2.0576184%
Negative Arbitrage	69,588.69

City of Oak Ridge, Tennessee
Total Outstanding Debt Service - Electric System
Estimated Outstanding Debt Service - Post 2017 Refunding (Excludes New Money)





DEBT SERVICE TO MATURITY AND TO CALL

**City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2009 (Electric System Portion)**

Date	Refunded Bonds	Refunded Interest	D/S To Call	Principal	Coupon	Interest	Refunded D/S
12/01/2017		157,221.88	157,221.88			157,221.88	157,221.88
06/01/2018		157,221.88	157,221.88			157,221.88	157,221.88
12/01/2018		157,221.88	157,221.88			157,221.88	157,221.88
06/01/2019	6,970,000.00	157,221.88	7,127,221.88			157,221.88	157,221.88
12/01/2019						157,221.88	157,221.88
06/01/2020				1,135,000.00	5.000%	157,221.88	1,292,221.88
12/01/2020						128,846.88	128,846.88
06/01/2021				1,150,000.00	5.000%	128,846.88	1,278,846.88
12/01/2021						100,096.88	100,096.88
06/01/2022				1,210,000.00	4.000%	100,096.88	1,310,096.88
12/01/2022						75,896.88	75,896.88
06/01/2023				1,300,000.00	4.250%	75,896.88	1,375,896.88
12/01/2023						48,271.88	48,271.88
06/01/2024				1,065,000.00	4.375%	48,271.88	1,113,271.88
12/01/2024						24,975.00	24,975.00
06/01/2025				1,110,000.00	4.500%	24,975.00	1,134,975.00
	6,970,000.00	628,887.52	7,598,887.52	6,970,000.00		1,699,506.32	8,669,506.32

Yield Statistics

Base date for Avg. Life & Avg. Coupon Calculation	10/31/2017
Average Life	5.065
Average Coupon	4.8137571%
Weighted Average Maturity (Par Basis)	5.065

Refunding Bond Information

Refunding Dated Date	10/31/2017
Refunding Delivery Date	10/31/2017



ESCROW CASH FLOW

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Date	Principal	Interest	Net Escrow Receipts	Present Value to 10/31/2017 @ 1.3768385%
12/01/2017	148,709.00	8,513.04	157,222.04	157,036.38
06/01/2018	106,915.00	50,307.28	157,222.28	155,962.95
12/01/2018	107,675.00	49,546.10	157,221.10	154,895.44
06/01/2019	7,078,381.00	48,840.83	7,127,221.83	6,973,785.23
	7,441,680.00	157,207.25	7,598,887.25	7,441,680.00

Escrow Cost Summary

Purchase date	10/31/2017
Purchase cost of securities	7,441,680.00
Target for yield calculation	7,441,680.00



ESCROW COST

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Type of Security	Maturity Date	Par Amount	Rate	Total Cost
SLGS	12/01/2017	148,709	0.950%	148,709.00
SLGS	06/01/2018	106,915	1.220%	106,915.00
SLGS	12/01/2018	107,675	1.310%	107,675.00
SLGS	06/01/2019	7,078,381	1.380%	7,078,381.00
			7,441,680	7,441,680.00

Purchase Date	Cost of Securities	Cash Deposit	Total Escrow Cost	Yield
10/31/2017	7,441,680	0.27	7,441,680.27	1.376838%
	7,441,680	0.27	7,441,680.27	



ESCROW DESCRIPTIONS

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Type of Security	Type of SLGS	Maturity Date	First Int Pmt Date	Par Amount	Rate	Max Rate	Total Cost
Oct 31, 2017:							
SLGS	Certificate	12/01/2017	12/01/2017	148,709	0.950%	0.950%	148,709.00
SLGS	Certificate	06/01/2018	06/01/2018	106,915	1.220%	1.220%	106,915.00
SLGS	Note	12/01/2018	12/01/2017	107,675	1.310%	1.310%	107,675.00
SLGS	Note	06/01/2019	12/01/2017	7,078,381	1.380%	1.380%	7,078,381.00
				7,441,680			7,441,680.00

SLGS Summary

SLGS Rates File	25SEP17
Total Certificates of Indebtedness	255,624.00
Total Notes	7,186,056.00
Total original SLGS	7,441,680.00



ESCROW REQUIREMENTS

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Period Ending	Interest	Principal Redeemed	Total
12/01/2017	157,221.88		157,221.88
06/01/2018	157,221.88		157,221.88
12/01/2018	157,221.88		157,221.88
06/01/2019	157,221.88	6,970,000.00	7,127,221.88
	628,887.52	6,970,000.00	7,598,887.52



ESCROW STATISTICS

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Escrow	Total Escrow Cost	Modified Duration (years)	Yield to Receipt Date	Yield to Disbursement Date	Perfect Escrow Cost	Value of Negative Arbitrage	Cost of Dead Time
General Obligation Refunding Bonds, Series 2017 (Electric System Portion of Refunding), Global Proceeds Escrow:							
	7,441,680.27	1.513	1.376838%	1.376838%	7,372,091.57	69,588.69	0.01
	7,441,680.27				7,372,091.57	69,588.69	0.01

Delivery date 10/31/2017
Arbitrage yield 1.998982%



ESCROW SUFFICIENCY

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2017

Date	Escrow Requirement	Net Escrow Receipts	Excess Receipts	Excess Balance
10/31/2017		0.27	0.27	0.27
12/01/2017	157,221.88	157,222.04	0.16	0.43
06/01/2018	157,221.88	157,222.28	0.40	0.83
12/01/2018	157,221.88	157,221.10	(0.78)	0.05
06/01/2019	7,127,221.88	7,127,221.83	(0.05)	
	7,598,887.52	7,598,887.52	0.00	



UNREFUNDED BOND DEBT SERVICE

City of Oak Ridge, Tennessee
General Obligation Refunding Bonds, Series 2009 (Electric System Portion)

Dated Date 10/31/2017
Delivery Date 10/31/2017

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service	Bond Balance	Total Bond Value
10/31/2017						2,100,000	2,100,000
12/01/2017			42,000	42,000		2,100,000	2,100,000
06/01/2018	1,045,000	4.000%	42,000	1,087,000	1,129,000	1,055,000	1,055,000
12/01/2018			21,100	21,100		1,055,000	1,055,000
06/01/2019	1,055,000	4.000%	21,100	1,076,100	1,097,200		
	2,100,000		126,200	2,226,200	2,226,200		