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**Join via phone** at 1-719-359-4580 **Meeting ID:** 893 4073 6332

Meeting Passcode: 804848

## AGENDA

1. **Call to Order**
2. **Roll Call**
3. **Pledge of Allegiance**
4. **Consent Items**
  - A. Approval of Agenda
  - B. Approval of Minutes
  - C. RESOLUTION 2026-02 - A RESOLUTION ADOPTING FACILITIES CONSTRUCTION AND TECHNICAL STANDARDS FOR THE KIOWA WATER AND WASTEWATER AUTHORITY
5. **Public Comment**

Public comments are limited to three (3) minutes. When you are recognized, please stand, state your name, and then address the Board in a professional manner.

The Directors may not respond to your comments during this meeting, rather they may take your comments and suggestions under advisement and your questions will be directed to the appropriate person or department for follow-up.
6. **Public Hearings**
7. **Financial Reports**
  - A. Expenditures for Year-to-Date 2025
8. **Staff Reports**
  - A. Wolf Compliance
  - B. Sasha Davidson
  - C. Kim Boyd
9. **General Business**

- A. Reappointment and renewal of term for Donald Gabehart
- B. Reappointment and renewal of term for Jill Duvall
- C. Updated Quote for Tower Fence
- D. Tap Fees
- E. KWWA Conceptual Water Plan

**10. Correspondence/Discussion**

**11. Adjourn**

**Agenda Approved By:**

**Donald Gabehart  
President, KWWA**

**Date Posted:**

**3/9/26**

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**Time Posted: 4:00pm**

## MEETING PROTOCOL AND STANDARDS OF CONDUCT

### Public Participation

Public comment is encouraged and will be listed as an agenda item at every regular KWWA Director's meeting.

Each individual wishing to be heard during the public comment period will be given up to three (3) minutes to make a comment.

The public comment period will not be used to make political endorsements or for political campaign purposes.

Questions from the Directors will be for clarification purposes only. Public comment will not be used as a time for problem-solving or reacting to comments made but, rather, for listening to the comments of citizens without taking any formal action.

The Directors may direct the Town Administrator to provide information requested by a speaker during the public comment period.

Speakers are not allowed to make belligerent, accusatory, impertinent, slanderous, threatening, abusive, or disparaging comments.

The President may elect to defer public comment on a specific issue that appears on the regular agenda until that specific item is addressed.

The President may call for order when sidebar conversations occur in the audience. Those conversations are distracting from the Board addressing the topics at hand.

Members of the public who do not follow proper conduct after a warning in a public meeting may be barred from further participation at that meeting or removed from the meeting chambers pursuant to the Kiowa Municipal Code and Colorado Revised Statutes.

### **ACTION MAY BE TAKEN ON ANY AND ALL ITEMS LISTED ON THE AGENDA**

All visitors must contact the Town Clerk five (5) business days before a scheduled meeting to be placed on the agenda. If special accommodations are necessary per ADA, contact 303-621-2366 prior to the meeting.

**CALL TO ORDER**

The regular meeting of the Kiowa Water and Wastewater Authority was called to order on February 10, 2026, at 5:32 pm by President Gabehart.

**PLEDGE OF ALLEGIANCE**

President Gabehart led the Board in the Pledge of Allegiance.

**ROLL CALL**

Present: President Donald Gabehart, Treasurer Teresa Parker, Secretary Jill Duvall, and Director Laurel Brown. Director Bret Wager was absent.

Also present:

Kim Boyd, Town Administrator

Sasha Davidson, Town Clerk

Michael Wolf, Chris Cobbley, and Steve Eis - Wolf Compliance on Zoom

**CONSENT ITEMS**

- A. **Approval of the agenda, minutes of January 27, 2026, meeting and Resolution 2026-01**  
President Gabehart entertained a motion to approve all items on the consent agenda. Secretary Duvall made the motion to approve all the items on the consent agenda. Treasurer Parker seconded the motion, and the motion passed 4-0, with no discussion.

**PUBLIC COMMENTS**

None

**PUBLIC HEARINGS**

None

**FINANCIAL REPORTS**

- A. **Expenditures for Year-to-Date 2026** - Administrator Boyd shared the financial reports. It was noted that the bulk of the repair costs have not hit the account yet. The 1<sup>st</sup> quarter of CIRSA payments have been made. There have been extra fees for Wolf Compliance that are above their normal operating costs due to repairs that have been made to the system.

**STAFF REPORTS**

A. **Wolf Compliance, ORC**

1. One side of wastewater plant is running, and UV channels have been cleaned. First bank of bulbs has been cleaned with second batch being done this week.
2. Check valve on second pump was pulled and rebuilt, waiting for sealant to dry before testing.

3. Three quotes have been secured for the pumps that need replaced. Demmer Pumps was the recommended vendor due to their detailed quote and quick response. The board agreed to go along with the recommendation. It will be a month or two before both pumps will be available.
4. The auger has been picked up and can be rebuilt, the screen will need to be replaced, and they are still waiting to hear on the motive pump that needs to be repaired/rebuilt so there is a redundancy pump available.
5. Sanitary survey happening at the end of the month on the water side. The State will be coming out to do the inspection. Documents are being gathered for that visit. There is concern about the storage tank inspection plan.
6. Meter replacement will be taking place this week for ones that are not responding or are broken.
7. Reactor One is being drained down – it is full of trash and sludge. A vac truck will need to be ordered to clean it out. Quotes will be requested for this process. The affluent quality is clearer but needs Reactor One so the flow will be cleaner and clearer.

#### **B. Kim Boyd, Administrator**

1. **Redundancy well** - \$2 million for redundancy well - \$1 million from Boebert's appropriation and \$1 million from DOLA, so looking to do project in phases as money is available. The current money can go towards planning and design. The second stage would be well construction, the third stage water treatment design, the fourth stage system integration, and the fifth stage green sand if required. Grants would be sought, as well as developer cooperation/cost share to fund the project so that fees are not added to our customers. There are three potential areas for development: the piece of property down 45, the piece of property up by the water tower and the piece of property north of the trailer park across from the fairground down Ute.
2. **Tap Fees** – There have been discussions that with possible developments and the need to update/expand infrastructure that tap fees need to be increased. Staff have been compiling a list of tap fees from different towns around the state into a spreadsheet. It has been requested that the board look at the data and consider raising tap fees.

#### **C. Sasha Davidson, Clerk**

1. Systems Total Report – Showing 36% water loss which has gone down from the 56% loss from last month, much due to all the work that Wolf Compliance has done to remediate issues.
2. There was 1 shut-off notice that was sent out along with 10 warning letters. All the shut off notices from the previous month paid their bill.
3. A lien was placed on a property where there was a death of the owner, and no contact has been able to be made with any family member. So now there are two liens that have been filed.

#### **NEW BUSINESS**

None

#### **OLD BUSINESS**

- A. Wright Water KWWA Draft Water Plan** – It has been sent to the County attorney who states that the verbiage in the revised plan is sufficient and the water plan is ok with them. The IGA with the county needs to be synced with the water plan. It was decided to continue discussing this at the March meeting.

**CORRESPONDENCE/DISCUSSION**

1. There was a discussion about the progress in getting the fence up at the water tower. It was requested that the updated quote for the fence around the water tower be included in the March 2026 meeting. It was noted that there are warning signs at the tower and a lock on the tower door.
2. There was discussion about the IGA with Elbert County. It was noted that until the water plan is completed, the IGA cannot be completed.
3. There was a brief discussion about the money market accounts and how the reserve funds had been split between water and wastewater on separate line items.

**ADJOURN**

President Gabehart entertained a motion to adjourn. Treasurer Parker made the motion to adjourn. Secretary Duvall seconded the motion, and the motion passed 4-0 with no discussion. The meeting adjourned at 6:16pm.

The next regular meeting will be on Tuesday, March 10, 2026, at 5:30pm at Kiowa Town Hall.

**Minutes Approved by:**

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**Jill Duvall, KWWA Secretary**

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**Sasha Davidson, Secretary to the Board**

**RESOLUTION 2026-02  
TOWN OF KIOWA, COLORADO  
KIOWA WATER AND WASTEWATER AUTHORITY**

**A RESOLUTION ADOPTING FACILITIES CONSTRUCTION AND TECHNICAL STANDARDS FOR THE KIOWA WATER AND WASTEWATER AUTHORITY**

**WHEREAS**, the Kiowa Water and Wastewater Authority (“KWWA”) is a governmental entity and political subdivision of the State of Colorado, responsible for providing water and wastewater services within its service area; and

**WHEREAS**, the Colorado Department of Public Health and Environment (“CDPHE”) requires that water and wastewater utilities adopt and maintain facilities construction and technical standards governing the design, construction, and installation of water and wastewater infrastructure; and

**WHEREAS**, KWWA’s Operations, Repair, and Compliance (“ORC”) team has prepared a comprehensive document titled “Kiowa Water & Wastewater Authority Facilities Construction and Technical Standards” (the “Standards”), which provides for the orderly construction, management, operation, and control of KWWA’s public utility systems, facilities, and improvements, including additions, extensions, and connections thereto; and

**WHEREAS**, the Standards address, among other things, the purpose, scope, and applicability of the Standards; definitions of key terms; requirements for the construction of proposed authority facilities, including potable water, non-potable water, and sewer systems; requirements for the construction of service lines; requirements for other facilities; and equivalent residential unit schedules; and

**WHEREAS**, the Standards are intended to supplement KWWA’s Rules and Regulations and to serve as comprehensive regulations governing the construction of facilities within KWWA’s service area, superseding all previous informal practices and policies that may conflict with the provisions thereof; and

**WHEREAS**, the Board of Directors (“Board”) has reviewed the Standards and finds that adoption of the Standards is necessary to comply with CDPHE requirements, to protect the health, safety, and welfare of the public and the customers of KWWA, and is in the best interests of KWWA.

**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE KIOWA WATER AND WASTEWATER AUTHORITY, KIOWA, COLORADO, AS FOLLOWS:**

**Section 1.** The Kiowa Water & Wastewater Authority Facilities Construction and Technical Standards, attached hereto as Exhibit A and incorporated herein by this reference, are hereby adopted as the official facilities construction and technical standards of KWWA, effective as of the date of this Resolution.

**Section 2.** All persons and entities designing, constructing, or installing water and wastewater facilities within KWWA’s service area shall comply with the Standards adopted herein, as may be amended from time to time by the Board.

**Section 3.** As provided in Article 1, Section 7 of the Standards, the Standards may be amended, modified, waived, or suspended from time to time by the Board as it deems appropriate.

**Section 4.** To the extent any provision of the Standards conflicts with KWWA's Rules and Regulations, or with any valid and applicable regulation promulgated by a state or federal agency, such conflicts shall be resolved in accordance with Article 1, Section 6 of the Standards.

**Section 5.** Any and all resolutions and policies, or parts thereof, in conflict or inconsistent with the actions of the Board adopted by this Resolution are, to the extent of such conflict or inconsistency, hereby repealed.

**Section 6.** This Resolution shall take effect immediately upon adoption.

**APPROVED AND ADOPTED BY THE BOARD OF DIRECTORS ON MARCH 10, 2026.**

KIOWA WATER AND WASTEWATER  
AUTHORITY

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Donald Gabehart, Board President

Attest:

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Sasha Davidson, Secretary to the Board

**KIOWA WATER & WASTEWATER AUTHORITY  
FACILITIES CONSTRUCTION AND TECHNICAL STANDARDS**

Adopted: March 10, 2026

# KIOWA WATER & WASTEWATER AUTHORITY FACILITIES CONSTRUCTION AND TECHNICAL STANDARDS

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# ARTICLE 1 - PURPOSE AND SCOPE OF FACILITIES CONSTRUCTION AND TECHNICAL STANDARDS

## **1.1 General Purpose and Authority**

The purpose of these Facilities Construction and Technical Standards is to provide for the orderly construction, management, operation and control of the public utility systems, facilities and improvements of the KIOWA WATER & WASTEWATER AUTHORITY (the “Authority”), including additions, extensions, and connections thereto. The Authority is a governmental entity and political subdivision of the State of Colorado and a body corporate with all powers of a public or quasi-municipal corporation which are specifically granted or implied for carrying out the objectives and purposes of the Authority.

Any Person desiring to construct facilities in the Authority’s Service Area shall comply with the most current version of these Facilities Construction and Technical Standards. The Authority shall provide copies of these Facilities Construction and Technical Standards to any Person who requests them, at cost. No Person shall be entitled to any exemption from the applicability of these Facilities Construction and Technical Standards due to the failure of that Person to become familiar with policies and standards of the Authority contained herein, as such policies may be amended or supplemented from time to time solely by Authority Board Approval.

## **1.2 Public Health, Safety, and Welfare**

It is hereby declared that the Facilities Construction and Technical Standards hereinafter set forth serve a public interest and are necessary for the protection of the health, safety, prosperity, security, and general welfare of the public and the Customers of the Authority.

## **1.3 Scope of Facilities Construction and Technical Standards**

These Facilities Construction and Technical Standards shall be treated and considered as new and comprehensive regulations, governing the operations and functions of the Authority and shall supersede all previous versions of Facilities Construction and Technical Standards as well as informal practices and policies of the Authority, which practices and policies may be in conflict with the provisions hereof.

## **1.4 Rules and Regulations of Other Governmental Entities**

Developers, Customers, and Owners shall abide by all applicable local, state, and federal laws, policies, rules, and regulations, as the same may be amended from time to time.

## **1.5 Rules of Construction**

These Facilities Construction and Technical Standards shall be liberally construed to affect the general purposes set forth herein, and each and every part hereof is separate and distinct from all other parts. Nothing contained herein shall be so construed as to prejudice or

affect the right of the Authority to secure the full benefit and protection of any law now in effect or any law which may subsequently be enacted pertaining to the affairs of the Authority. No omission or additional material set forth herein shall be construed to alter, waive or deviate from any grant of power, duty, responsibility, or limitation or restriction imposed or conferred upon the Authority by statutes now existing or amended in the future or under any contract or agreement existing between the Authority and any other governmental entity. The Authority reserves the right, now or in the future, to construe any provision hereof in its sole discretion in order to effectuate lawful purposes of the Authority and to attempt to ensure orderly and non-discriminatory treatment of all Persons or entities subject to these Facilities Construction and Technical Standards.

The Facilities Construction and Technical Standards constitute guidelines for the benefit of the Authority and its Consultants, Contractors, Customers, Developers, and Owners and must be complied with by all Customers, Developers, and Owners absent receipt of a properly written waiver from the Authority. No Person shall obtain, by virtue of the Facilities Construction and Technical Standards, any right or cause of action against the Authority or its Administrator or Consultants arising as a result of the enforcement or lack of enforcement of the Facilities Construction and Technical Standards by the Authority. Nothing herein shall be deemed to be a waiver of any immunity granted to the Authority under Colorado law.

## **1.6 Conflicts**

In case of any conflict between any provision of these Facilities Construction and Technical Standards, the Authority shall be entitled to resolve such conflict in its own favor at the Authority's sole discretion, it being the intention of the Authority that these Facilities Construction and Technical Standards shall be construed or interpreted by the Authority in such manner so as to maximize the ability of the Authority to govern and manage the Authority and its services and facilities.

To the extent that any of the Facilities Construction and Technical Standards are inconsistent with the Rules and Regulations, the Authority shall be entitled to resolve such conflict in its own favor at the Authority's sole discretion.

To the extent that any of the Facilities Construction and Technical Standards are inconsistent with any valid and applicable regulations promulgated by any state, or federal agency, the regulations of the state or federal agency shall govern.

## **1.7 Amendment, Modification, Waiver, or Suspension**

These Facilities Construction and Technical Standards may be amended, modified, waived, or suspended, from time to time, by the Authority Board, as it deems appropriate. Neither notice of such amendments, modifications, waivers, or suspensions nor public hearing shall be required to be provided by the Authority prior to exercising its amendment, modification, waiver, or suspension powers. No refusal, failure, or omission of the Authority or its agents to apply or enforce these Facilities Construction and Technical Standards shall be construed as an alteration, waiver, or deviation from any grant of power, duty or responsibility, or any limitation or restriction upon the Authority by virtue of statutes now existing or subsequently amended, or under any

contract or agreement existing between the Authority and any other entity. Any express waiver shall not be deemed an amendment of these Facilities Construction and Technical Standards. However, an express waiver or variance from these Facilities Construction and Technical Standards by the Authority Board shall supersede these Facilities Construction and Technical Standards regarding the subject matter of the express waiver. No waiver shall be deemed a continuing waiver.

## **1.8 Severability**

The invalidity or unenforceability of any portion or previous version of these Facilities Construction and Technical Standards shall not affect the validity or enforceability of any other portion or provision. Any invalid or unenforceable portion or provision shall be deemed severed from these Facilities Construction and Technical Standards and the balance of these Facilities Construction and Technical Standards shall be construed and enforced as if these Facilities Construction and Technical Standards did not contain such invalid or unenforceable portion or provisions.

## ARTICLE 2 - DEFINITIONS

Unless the context specifically states otherwise, the meaning of the following terms when used herein shall be as set forth below:

### **2.1 EQR**

This is an abbreviation for Equivalent Residential Unit which is that level of usage equal to an average single-family detached residence, from a system demand standpoint.

### **2.2 Developer**

Shall have the meaning provided in the Authority's Rules and Regulations but for purposes of these Facilities Construction and Technical Standards shall also include any designated representative, agent, or contractor of the Developer.

### **2.3 Facilities Construction and Technical Standards**

Shall mean the Facilities Construction and Technical Standards adopted by the Authority Board including all amendments, policies, and resolutions.

### **2.4 Owner**

Shall have the meaning provided in the Authority's Rules and Regulations but for purposes of these Facilities Construction and Technical Standards shall also include any designated representative, agent, or contractor of the Owner.

### **2.5 Proposed Authority Facilities**

Shall mean those Potable Water, Non-Potable Water and/or Sewer facilities, Mains and other System improvements and all improvements and appurtenances thereto constructed or proposed to be constructed by an Owner/Developer desiring to have Service extended beyond the limits of the Authority's existing System for acceptance and ownership by the Authority.

### **2.6 Any Other Term**

Abbreviation not herein defined shall be defined as presented in the "Glossary – Water and Sewage Control Engineering", A.P.H.A., A.W.W.A., A.S.C.E., and F.W.S.A., latest editions.

Other capitalized terms used herein shall have the meaning provided for them in the Authority's Rules and Regulations.

## ARTICLE 3 - CONSTRUCTION OF PROPOSED AUTHORITY FACILITIES

### 3.1 General

#### 3.1.1 Request for Extension of Authority Facilities

An Owner/Developer desiring to have Service extended beyond the limits of the Authority's existing System shall file a written facilities extension request and plan at the Authority's business office. Upon receipt of such request the Authority shall conduct a preliminary review of the proposed extension, and, if such extension is found to be in the best interests of the Authority, will provide comments and requirements to be incorporated into the design and construction of the facilities. The Authority shall have continuing authority to review the extension planning and construction and require such changes as deemed necessary for the protection and benefit of the Authority. Normally, during the preliminary review phase the pipeline sizing will be reviewed and oversize requirements, if any, established. After preliminary review, the Developer may proceed with the final design. It is noted that Potable and Non-Potable Water System extension and planning may also require approval by the relevant fire protection Authority; the Owner/Developer is responsible for obtaining these approvals as well as resolving any differences in design requirements imposed by the Authority.

#### 3.1.2 Design/Installation/Construction

All Proposed Authority Facilities shall be designed, constructed, and installed in conformance with the standards set forth below.

All Proposed Authority Facilities are to be designed, constructed, and installed in accordance with all applicable local, state, and federal laws, policies, codes, rules, and regulations, as the same may be amended from time to time, generally accepted good construction practices and the minimum standards and details contained in these Facilities Construction and Technical Standards. The standards and details are provided for standardization purposes only and represent minimum design standards and details which may require upgrading for specific applications.

#### 3.1.3 Preliminary Design Procedures

Preliminary designs for Proposed Authority Facilities may be accomplished by the Authority or by a professional engineer registered in the State of Colorado, at the Developer's sole expense, as directed by the Authority. All preliminary plans and final designs must be prepared by or reviewed by the Authority's Engineer and approved by the

Authority's Administrator or authorized representative. The Authority shall perform all inspections required by the Authority.

### *3.1.3.1 Drawings*

Unless otherwise approved by the Authority, all design drawings shall be on 24" x 36" mylar, using ink for all background information and permanent pipeline work. The drawing scale for area plans shall be 1" = 50'. The cover sheet for each drawing set shall have an approval block as required by the Authority. Additionally, a digital file of the same must be provided in PDF format.

Prior to the construction or installation of any Proposed Authority Facilities, the Developer shall submit design documents to the Authority for review and approval. Each construction drawing set shall have an "approval block" affixed thereto which provides for the signatures of the Administrator or authorized representatives of the Authority, the Authority's Engineer, and the applicable fire protection Authority. Project review and approval by the applicable fire protection Authority are required only for water facilities.

### 3.1.4 Pipeline Sizing

Non-Potable Water, Potable Water distribution pipelines, sewer collection pipelines, and all related facilities shall be sized adequately to serve the property or properties for which they are designed. Where the distribution or collection lines also have a transmission function serving areas outside of the subject tract, as determined by the Authority, then the Authority may require that the lines be oversized to accommodate the anticipated needs of the Authority.

### 3.1.5 Location of Authority Facilities

All Authority Facilities shall be located within rights-of-way, parcels, easements, or other property interests approved by the Authority. Developer/Owner shall obtain and provide to the Authority, at no charge to the Authority, right-of-way, parcels, easements, or other property interests for the location of all Proposed Authority Facilities in a form acceptable to the Authority. Rights-of-way, parcels, easements, or other property interests shall be noted on all plans and submittals. No construction related to the Proposed Authority Facilities shall take place until the rights-of-way, parcels, easements, or other property interests required by this Section have been approved and accepted by the Authority.

Preliminary and final planning shall be such that adequate space and reservations for right-of-way, parcels, easements, or other property interests shall be made to allow for

the construction and maintenance of the Proposed Authority Facilities, as approved by the Authority in its sole discretion.

### 3.1.6 Final Design Procedures

Final design documents for Non-Potable Water, Potable Water, and Sewer System extension and planning may be accomplished by the Authority or by a professional engineer registered in the State of Colorado, at the Developer's sole expense, as directed by the Authority. Final design documents will be furnished to the Authority by the Owner/Developer for review and approval prior to any construction activities taking place. Final design drawings shall conform to the standards set forth in Section 3.1.3.1 of these Facilities Construction and Technical Standards.

The final design submittal shall include construction drawings, specifications, and other contract documents as required by the Authority. These documents shall be prepared by the Owner/Developer in a manner acceptable to the Authority. In all cases, the contract documents must be reviewed and approved by the Authority. Plan and profile drawings shall be on a horizontal scale of 1" = 50' (other scales may be accepted, as determined by the Authority Engineer). All elevations must be North American Vertical Datum 1988 (NAVD88) datum. Elevations of existing Authority Facilities shall be field verified in the final design.

All Mains must be installed in trenches containing no other utility conduits, except that the Owner/Developer may install subsurface drain lines in conjunction with the Sewer Mains when approved in advance by the Authority. The line type and depth of such installations shall be as determined by the Authority's Engineer. The topography and alignment of such rights-of-way shall be suitable for Main installation as determined by the Authority's Engineer.

Designs for Proposed Authority Facilities shall be submitted for review at least forty-five (45) days before approval is expected. Plans, specifications, and easements submitted for Authority approval must be complete and meet with the approval of the Authority. Design approvals are valid for 12 months from the date of Authority approval unless otherwise specifically noted in the approval. If construction is not substantially complete by that time, resubmittal of the plans may be required by the Authority and construction may not be continued without the Authority's approval.

### 3.1.7 Construction Phase

After all necessary approvals have been granted by the Authority, the Owner/Developer must have all Proposed Authority Facilities constructed in strict accordance with the Authority's approved design and inspected by the Authority.

The Authority will inspect to assure quality construction, installation, materials and practices, and conformity with the approved plans and specifications. The Authority will not perform or be responsible for other construction-related services (e.g., staking easement and/or line locations, measuring quantities, preparing pay estimates, and administrative or management-type relations with the contractor).

The Owner/Developer shall schedule a pre-construction conference on the job site with the Authority Engineer and/or Administrator prior to construction. The Owner/Developer shall notify the Authority five (5) working days prior to beginning construction and thereafter keep the Authority informed of the construction schedule. No work may be covered, completed, or made inaccessible without the presence and approval of the Authority.

Construction staking shall be completed prior to the installation of the Potable Water, Non-Portable Water, and/or Sewer lines. All staking shall be kept in place throughout the installation of such lines. Staking shall include easement or right-of-way stakes and cut/offset stakes (50' max. spacing unless otherwise approved).

### 3.1.8 Costs

All Actual Costs, including, but not limited to, Authority costs and expenses related to Proposed Authority Facilities, including, but not limited to, Engineer/Inspector/Administrator time or expenses, attorneys' fees, costs related to review and processing of a written facilities extension request and plan, costs related to review of preliminary and final designs and any costs for uncovering or accessing work that was not inspected and approved by the Authority prior to being covered shall be the sole responsibility of the Owner/ Developer.

### 3.1.9 As-Built Drawings

Accurate "as-built" drawings (sealed by a professional engineer) showing adequate dimensioned ties to surface features for all buried facilities to allow for future locating must be provided at the completion of work by the Owner/Developer. "As-built" drawings shall furnish information as required. The Authority or its Engineer shall be provided with three sets of "as-built" drawings, one set of "as-built" drawings as CAD files on flash drive, one set of GIS shapefiles on flash drive, and one set of printed drawings on 24" x 36" mylar, using ink for all background information and permanent pipeline work. The drawing scale for area plans shall be 1" = 50'.

### 3.1.10 Inspection, Approval, and Acceptance of Authority Facilities

Upon completion of construction of facilities constructed by the Owner/Developer, the Owner/Developer may apply to the Authority for initial acceptance and inspection of such facilities and later final acceptance of such facilities as provided in Section 4.2.4 of The Authority Rules and Regulations.

### 3.1.11 Operation and Maintenance

The Authority shall be responsible for the maintenance, operation, repair, and replacement of the Authority Facilities as provided in Section 4.2.5 of The Authority Rules and Regulations. The maintenance, operation, repair, and/or replacement of all other facilities are the sole responsibility of the Owner/Developer.

## 3.2 Potable Water System

### 3.2.1 Design/Sizing

Potable Water Mains shall be designed to meet the most stringent of the following two conditions:

- Maximum hourly demand with pressures not less than 40 psi at any point of the distribution system, or
- Maximum daily demand rate plus fire flow demand (as determined by ISO guidelines) with delivery pressures of not less than 20 psi at the hydrant.

The normal minimum size Potable Water Main shall be a minimum of 8" for short looped lines in single-family residential areas.

Potable Water Main sizing and connections shall be reviewed with the Authority Engineer prior to final detailing and drafting. The systems shall be designed to maximize interconnections and strengthening of the Authority's Potable Water System. Where certain lines may also have a transmission function, in the opinion of the Authority, the Authority may direct that such lines be oversized, and the Developer's Engineer shall so design the system.

Potable Water pipelines shall have a minimum cover of four and one-half (4.5) feet. Potable Water pipelines shall not be placed deeper than 8 feet without approval by the Authority.

Regulations normally require a 10-foot minimum horizontal separation between Potable Water Mains, Non-Potable Water Mains, and Sewer Mains. When located in public streets, Potable Water pipelines shall normally be located as required. Whenever a crossing must occur where a Non-Potable Water Main or Sewer Main passes within 10 feet horizontally of a Potable Water Main, and where the Potable Water Main is not at least 24" vertically clear above the

### 3.2.2 Pipeline Material

All Potable Water Mains 16” and smaller shall be Blue C900 PVC with hub joints. Bore lines and lines over 16” will be HDPE. HDPE will be wrapped in blue wrap and tracer wire for identification purposes. All fittings will be approved by the Authority.

### 3.2.3 Buried Valves

Valves 12” and smaller shall be non-rising stem, bronze mounted gate valves with mechanical joint ends conforming to AWWA C500. Valves shall have 2” square operating nuts and open left (counterclockwise rotation). Valves shall be Mueller or approved equal. All valves on Potable Water Mains that are deeper than 4.5’ from the surface shall have risers installed to bring the valve nut to within 4.5’ of the surface.

### 3.2.4 Valve Boxes

Each buried valve shall be provided with a cast iron valve box and round cover. The box shall have a minimum inside diameter of 5¼” and be adjustable in length and of the screw type. The word “WATER” shall be cast on the cover. Valve boxes shall be Tyler, Clow, or approved equal. Valve boxes shall allow for at least 3” additional extension above the level required for the final grade at the time of installation. All valves in the system must be open-left. Open-right valves will not be allowed.

### 3.2.5 Pipeline Installation

Potable Water pipelines shall be installed in a thorough and workmanlike manner in accordance with the design documents that have been approved by the Authority. The minimum bedding and backfill requirements for pipelines and appurtenances shall be done per code.

Tracer wire installation: direct burial #12 AWG Solid (0.0808” diameter), steel core soft drawn tracer wire, 250# average tensile break load, 30 mil high molecular-high density polyethylene jacket complying with ASTM-D-1248, 30 volt rating. Color shall be “blue” for domestic water (potable) pipelines and “purple” for raw water (non-potable) pipelines. Manufactured by Copperhead Industries part number 1230-SF, or approved equal.

All Potable Water pipeline fittings (i.e. bends, tees, plugs, and caps) shall be installed with concrete thrust blocks adequately designed for the specific application. Thrust blocks shall be cast-in-place from concrete having a minimum compressive strength of 3,000 psi. Alternate means of thrust restraint may be considered and approved for use where proven to provide similar restraint. Supplemental restraint may also be used where the Engineer believes the soil bearing pressures to be inadequate, or is concerned about subsequent movement.

### 3.2.6 Fire Hydrants

Fire hydrants shall be located as required by the Authority and as approved by the relevant fire protection Authority. The Owner/Developer shall be required to obtain the approval from the relevant fire protection Authority for fire hydrant locations.

Fire hydrants shall be of the dry barrel type and conform with AWWA C502. Hydrants shall have a 5¼” main valve, two 2½” hose connections, and one 4½” pumper connection. Hydrants shall have 6” mechanical joint connections and a safety traffic flange. Fire hydrants shall be Mueller Centurion No. A-423 and painted yellow. Fire hydrants in the system must be open-left.

### 3.2.7 Air Relief and Vacuum Relief Valves

Air/Vac relief valve will be placed at high points in the main line as deemed necessary by the Authority Engineer.

### 3.2.8 Pressure Testing

All finished Potable Water pipelines, after reaction blocking is in place, shall be pressure and leakage tested at not less than 150 psi.

No Potable Water pipeline installation will be acceptable until the leakage is less than the amount computed by the following formula:

$$L = \frac{SD(P)^{0.5}}{133,200}$$

- L = Allowable leakage in gallons (per hour)
- S = Tested length of pipe (feet)
- D = Nominal diameter of pipe, inches
- P = Average Test pressure during the test, psi

### 3.2.9 Disinfection

All Potable Water pipeline shall be disinfected in accordance with AWWA C601 after all construction work has been completed. Chlorine shall be added to the water at the necessary locations in the amount to form a 50 ppm free chlorine residual. The Chlorine solution shall be left in the Potable Water pipelines for not less than 24 hours, during which time all valves and fire hydrants shall be operated in order to disinfect the appurtenances. After that length of time, the chlorine residual of the solution, at any place in the Potable Water System, shall not be less than 10 ppm. All chlorination work must be done under the supervision of the Authority. At the end of 24 hours, a bacteriological test is to be performed by the Authority to ensure adequate disinfection. Disinfection water will then be removed and dechlorinated prior to the final connection.

### 3.2.10 Sample Stations

Sample stations will be required every 3,000 feet and at each dead end.

### 3.2.11 Blow-offs

Blow-offs will be required at each dead end and will be a Mueller fire hydrant or an auto flush blow-off if approved by the Authority.

## 3.3 Non-Potable Water System

The minimum standards for Non-Potable Water Systems shall be similar to those given in Section 3.2 of these Facilities Construction and Technical Standards for Potable Water Systems except as otherwise provided in this Section 3.3.

### 3.3.1 Design/Sizing

Non-Potable Water Main sizing shall be to deliver not less than 40 psi dynamic pressure and not less than 8" at the Non-Potable Water Main during peak flow rate (demand) conditions. The Non-Potable Water System will not be designed to provide any fire protection flows.

### 3.3.2 Pipeline Materials

Non-Potable Water pipeline shall be purple and shall conform with AWWA C900, 150 minimum pressure class (for 12" and smaller PVC mains). Bore lines and 12" or larger will be HDPE. HDPE will be wrapped in purple wrap for identification.

### 3.3.3 Valve Boxes

Each buried valve shall be provided with a cast iron valve box and triangular cover. The box shall have a minimum inside diameter of 5¼” and be adjustable in length and of the screw type. The word “IRRIG” shall be cast on the cover. Valve boxes shall be Tyler, Clow, or approved equal. Valve boxes shall allow for at least 3” additional extension above the level required for final grade at the time of installation.

### 3.3.4 Pipeline Installation

Non Potable Water pipelines shall be installed in a thorough and workmanlike manner in accordance with the design documents that have been approved by the Authority. The minimum bedding and backfill requirements for pipelines and appurtenances shall be as required by code.

Tracer wire installation: direct burial #12 AWG Solid (0.0808” diameter), steel core soft drawn tracer wire, 250# average tensile break load, 30 mil high molecular-high density polyethylene jacket complying with ASTM-D-1248, 30 volt rating. Color shall be “blue” for domestic water (potable) pipelines and “purple” for raw water (non-potable) pipelines. Manufactured by Copperhead Industries part number 1230-SF, or approved equal.

All Non Potable Water pipeline fittings (i.e. bends, tees, plugs, and caps) shall be installed with concrete thrust blocks adequately designed for the specific application. Thrust blocks shall be cast-in-place from concrete having a minimum compressive strength of 3,000 psi. Alternate means of thrust restraint may be considered and approved for use where proven to provide similar restraint. Supplemental restraint may also be used where the Engineer believes the soil bearing pressures to be inadequate, or is concerned about subsequent movement.

### 3.3.5 Warning Notification

All Non-Potable Water pipelines shall be installed with warning tapes or with the warning printed directly onto the pipeline and 10GA coated copper tracer wire. Warning tapes shall be installed directly on top of the pipeline longitudinally and shall be centered. The tracer wire shall be taped to the pipeline. Acceptable tape or printing directly on the pipeline shall state: “NON-POTABLE LINE – DO NOT DRINK.”

### 3.3.6 Fire Hydrants

Non-potable fire hydrants shall be of the dry barrel type and conform with AWWA C502. Hydrants shall have a 5¼” main valve, two 2½” hose connections, and one 4½” pumper connection. Hydrants shall have 6” mechanical joint connections and a safety traffic flange. Fire hydrants shall be Mueller Centurion No. A-423 and painted purple. These hydrants will be installed every 2,000 feet. A 3’ clearance will be maintained around all hydrants.

### 3.3.7 Air Relief and Vacuum Relief Valves

Air/Vac relief valve will be placed at high points in the main line as deemed necessary by the Authority Engineer.

### 3.3.8 Blow-offs

Blow-offs will be required at each dead end and will be a Mueller fire hydrant painted purple or an auto flush blow-off if approved by the Authority.

## 3.4 Sewer System

### 3.4.1 Design/Sizing

Sewer System design is intended to provide for all gravity services as provided by the Authority. Sewage flows shall be directed to the Sewer Main having capacity as directed by the Authority. Sewage lift stations will not be permitted unless specifically authorized by the Authority.

Sewers Mains shall be designed to carry not less than the projected peak flow rates flowing half full (safety factor = 2.0), unless otherwise approved by the Authority. The minimum size Sewer Main shall be 8” in diameter.

Sewer Mains shall generally be designed with sufficient depth to serve basements by gravity. The minimum cover for a Sewer Main shall be 6” from the top of the Sewer Main to the finished grade.

Manholes shall be located at a maximum spacing of 500’ center-to-center and also at changes in Sewer pipeline alignment and/or grade and at the end of each Sewer line. Sewer Mains shall be laid with a uniform slope between manholes at a minimum of .33% slope. Sewer Mains shall be so designed and constructed to give mean velocities, when flowing at its design flow rate, of not less than 2’ per second.

### 3.4.2 Pipeline Materials

Sewer pipe and fittings shall be PVC, SDR 35 minimum thickness conforming to ASTM D3034. Joints shall be of the “slip on” type with an integrally cast bell having an elastomeric gasket. Sewer pipe shall be green in color.

### 3.4.3 Manholes

Manholes shall be precast concrete units conforming with ASTM C-478. Manholes shall have a minimum inside diameter of 4’. Manholes shall be constructed and installed in accordance with code. All manholes shall be coated to protect against groundwater intrusion.

### 3.4.4 Manhole Covers

Manhole frames and covers shall be cast iron with the word “SEWER” cast on the cover. The frame shall provide a minimum clear opening of 24”.

### 3.4.5 Pipeline Installation

All Sewer Mains and pipelines shall be installed in a thorough, workmanlike manner in accordance with the design documents that have been approved by the Authority. The minimum bedding and backfill requirements shall be in accordance with code.

Where required for structural reasons or to protect Potable Water pipelines, the Sewer Main and pipelines shall be encased in reinforced concrete.

### 3.4.6 Underdrains

The Authority does not permit underdrains to be installed with the Sewer lines.

### 3.4.7 Flushing and Testing

The following testing procedures are intended to determine if the Sewer line(s) meet the Authority’s minimum quality standards. Alternative procedures meeting or exceeding the intent of these procedures, as determined by the Authority, are acceptable. In any case, however, alternative testing procedures must be included in the design plans and specifications. The Owner/Developer shall notify the Authority – no less than 48 hours prior to the desired test time. The Authority will have final say on the time and date

that the testing will be performed. The Authority may elect, in its sole discretion, to witness all tests and verify the accuracy and acceptability of the equipment utilized. The Authority will inform the Owner/Developer regarding acceptable methods of repair in the event one or more sections fail to pass any test.

*3.4.7.1 Pipeline Flushing*

The Owner/Developer shall flush the pipelines, as the work progresses by means that are in accordance with good practice, to ensure that earth, sand, rocks, or other foreign materials are removed from the interior of the pipeline.

*3.4.7.2 Alignment and Grade*

Pipelines will be checked by the Authority to determine whether any displacement of the pipe has occurred after the trench has been bedded. The test will be as follows:

A Camera inspection of the interior pipes must be performed by the Owner/Developer. A video copy of the inspection must be provided to the Authority for review. If the review shows poor alignment, displaced pipe, earth, or other debris in the pipe, or any other kinds of defects, the defects, determined by the Authority, shall be remedied by the Owner/Developer. The test will be repeated following completion of backfilling and any poor alignment, displaced pipe, or other defects, determined by the Authority, shall be corrected at the Owner/Developer's expense.

*3.4.7.3 Leakage*

Tests for water tightness shall be made by the Owner/Developer in the presence of the Authority representative. The Owner/Developer shall provide assistance to the Authority in the development of a detailed record of the testing program. The sewer and connections shall not leak in excess of the following rate for a 24-hour test period:

MAXIMUM ALLOWABLE SEWER LEAKAGE

<u>Pipe Size</u> <u>Inches</u>	<u>Leakage</u> <u>Gal/Foot/24 Hours</u>
18	0.68
15	0.57
12	0.45
10	0.38

Each reach of pipeline between manholes shall be tested individually. Any individual reach that leaks in excess of the amount allowed in the previous paragraph shall be considered as failing, and shall be repaired and retested.

At the discretion of the Authority, the time for the leakage rate test may be shortened to four (4) hours.

The tests and measurement of infiltration or exfiltration shall be conducted in a manner as approved by the Authority. The Owner/Developer shall repair the sewer in a manner that is satisfactory to the Authority and re-test until satisfactory tightness is obtained.

Infiltration tests in addition to a low-pressure air test will be used if the groundwater table is 1' or more above the finished sewer. Otherwise, exfiltration tests will be used. The minimum head for the exfiltration tests shall be 2' above the top of the pipe at its highest point in the test section. Sections shall be bulk-headed so that during any test the head on the sewer at its lowest elevation will not be more than 10'.

#### *3.4.7.4 Low-Pressure Air Test*

At the option of the Owner/Developer, low-pressure air testing of the installed Sewer pipe may be used instead of the leakage exfiltration test. The following criteria and procedure shall be utilized otherwise approved by the Authority:

- Plug Restraint. It is extremely important and essential that all plugs be installed and braced in such a way that blowouts are prevented. It is recommended that every plug be positively braced and that no one be allowed in the manhole adjoining a line being tested so long as pressure is maintained in the line.
- Relief Valve. All pressurizing equipment used for low-pressure air testing shall include a regulator or relief valve set no higher than 9 psig to avoid over-pressurizing and displacing temporary or permanent plugs. As an added safety precaution, the pressure in the test section should be continuously monitored to make certain that it does not at any time exceed 9 psig.
- Plug Design. Either mechanical or pneumatic plugs may be used. All plugs shall be designed to resist internal testing pressures without the aid of external bracing or blocking. However, the Owner/Developer should internally restrain or externally brace the plugs to the manhole wall as an added safety precaution throughout the test.

- Singular Control Panel. To facilitate test verification by the inspecting Engineer, all air used shall pass through a single, above-ground control panel.
- Equipment Controls. The above-ground air control equipment shall include a shut-off valve, pressure regulating valve, pressure relief valve, input pressure gauge, and a continuous monitoring pressure gauge having a pressure range from 0 to at least 10 psi. The continuous monitoring gauge shall be no less than 4" in diameter with minimum divisions of 0.10 psi and an accuracy of  $\pm 0.04$  psi.
- Separate Hoses. Two separate hoses shall be used to: (1) connect the control panel to the sealed line for introducing low-pressure air, and (2) a separate hose connection for constant monitoring of air pressure build-up in the line. This requirement greatly diminishes any chance of over-pressurizing the line.
- Pneumatic Plugs. If pneumatic plugs are utilized, a separate hose shall also be required to inflate the pneumatic plugs from the above-ground control panel.
- Laterals, Stubs, and Fittings. During Sewer construction, all service laterals, stubs, and fittings into the sewer test section shall be properly capped or plugged so as not to allow for air loss that could cause an erroneous air test result. It may be necessary and is always advisable to restrain gasketed caps, plus or short pipe lengths with bracing stakes, clamps and tierods, or wire harnesses over the pipe bells.
- Plug Installation and Testing. After manholes have been tested for alignment and grade, and a manhole-to-manhole reach of pipe has been backfilled to final grade and prepared for testing, the plugs shall be placed in the line at both manholes and secured. It is advisable to seal test all plugs before use. Seal testing may be accomplished by laying one length of pipe on the ground and sealing it at both ends with the plugs to be checked. The sealed pipe should be pressurized to 9 psig. The plugs shall hold against this pressure without bracing and without any movement of the plugs out of the pipe. No persons shall be allowed in the alignment of the pipe during plug testing. The upstream end of the line shall be plugged first to prevent any upstream water from collecting in the test line.
- Line Pressurization. Low-pressure air shall be slowly introduced into the sealed line until the internal air pressure reaches 4.0 psig.
- Pressure Stabilization. After constant pressure of 4.0 psig is reached, the air supply shall be throttled to maintain that internal pressure for at least 2 minutes. This time permits the temperature of the entering air to equalize with the temperature of the pipe wall.

- Timing Pressure Loss. When temperatures have been equalized and the pressure stabilized at 4.0 psig, the air hose from the control panel to the air supply shall be shut off or disconnected. The continuous monitoring pressure gauge shall then be observed while the pressure is decreased to no less than 3.5 psig. The timing pressure loss test shall then commence at a pressure reading of 3.5 psig, or any convenient observed pressure reading between 3.5 psig and 4.0 psig (except as adjusted for groundwater as follows).
- Air Pressure Adjustment. An air pressure correction, which must be added to the 3.5 psig normal test starting pressure, shall be calculated by dividing the average vertical height, in feet of groundwater above the invert of the sewer pipe to be tested, by 2.31. The result gives the air pressure correction in pounds per square inch to be added. (For example, if the average vertical height of groundwater above the pipe invert is 2.8', the additional air pressure above the pipe invert is 2.8 divided by 2.31 or 1.2 psig. This would require a minimum starting pressure of 3.5 plus 1.2 or 4.7 psig). The allowable pressure drop of 1.0 psig and the timing in Table I are not affected and shall remain the same. In no case, however, should the starting test pressure exceed 9.0 psig.
- Determination of Success. If the time shown in Table I for the designated pipe size and length elapses before the air pressure drops 1.0 psig, the section undergoing the test shall have passed.

**TABLE I**

**SPECIFICATION TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015**

1 Pipe Diameter (in)	2 Minimum Time (min) (sec)	3 Length For Minimum Time (ft)	4 Time For Longer Length (sec)	100	150	200	250	300	350	400	450
				ft	ft	ft	ft	ft	ft	ft	
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41

**3.4.7.5 Deflection**

All PVC Sewer pipelines shall be tested for vertical deflection after placement and compaction of backfill unless testing is specifically excepted by

the Authority. Method testing shall be by deflector of the rigid GO/No-GO type device. An alternative method will be permitted only by the written permission of the Authority. Maximum allowable deflection shall be five (5) percent of the pipe diameter. Any and all pipe with vertical deflection greater than the allowable shall be excavated, removed from the pipeline, replaced, backfilled, and compacted as specified and retested.

### 3.4.8 Testing Manholes

During the construction of the manholes, the Owner/Developer shall, in accordance with good practice, ensure that no earth, sand, rocks, or other foreign material exists on the joint surface during the assembly of the sections. The Authority shall check each manhole to determine whether the manhole fulfills the requirements of the Authority.

#### *3.4.8.1 Visual Examination*

The Authority shall visually check each manhole, both exterior, and interior, for flaws, cracks, holes, or other inadequacies which might affect the operation or watertight integrity of the manhole. Should any inadequacies be found, the Owner/Developer shall make any repairs deemed necessary by the Authority.

#### *3.4.8.2 Leakage Test*

All manholes shall be tested for leakage and all tests shall be witnessed by the Authority. The leakage test shall be conducted prior to backfilling around the manhole and shall be carried out in the following manner:

- All lines leading into or out of the manhole shall be tightly plugged.
- The manhole shall be filled with water to a level at least 2” above the uppermost step. The water shall be allowed to stand for two hours to allow for normal water absorption into the manhole material. At the end of the two-hour stabilization period, if the water level in the manhole has dropped below the top step, additional water will be added to bring the level above the step as before. Any visible external leakage or drop in water level noted within the one-hour test period shall constitute failure and the Owner/Developer shall repair or replace the defective work and retest.

## ARTICLE 4 - CONSTRUCTION OF SERVICE LINES

### 4.1 General

#### 4.1.1 Design/Installation/Construction

All Service Lines shall be designed, constructed, and installed in conformance with the standards set forth below.

All Service Lines are to be constructed in accordance with all applicable local, state, and federal laws, policies, codes, rules, and regulations, as the same may be amended from time to time, generally accepted good construction practices, and the minimum standards and details contained in these Facilities Construction and Technical Standards. The standards and details are provided for standardization purposes only, and represent minimum design standards and details which may require upgrading for specific applications.

The Authority may, at its sole discretion, oversee the installation of Service Lines prior to the commencement of Service.

#### 4.1.2 Sizing

All Service Lines and all related facilities shall be sized adequately to serve the structure or structures for which they are designed. The sizing of Service Lines shall be the responsibility of the Owner/Developer. When requested by the Authority, the Owner/Developer shall, at the Owner/Developer's expense, furnish data, plans calculations, or other information as required by the Authority for the evaluation of the Service Line size.

#### 4.1.3 Location

All Service Lines shall be primarily located on property owned by the Owner or Developer with the portion (near and at the point where the connection is made with the Main) located within rights-of-way, parcels, easements, or other property interests owned by the Authority.

All Service Lines shall be located in areas suitable for the type of Service Line to be installed.

Where Service Lines will be parallel or approximately parallel to a structural wall, the Service Line shall be at least 5' from such wall. Penetrations through structures shall

be approximately at right angles and shall provide flexibility such that the Service Line will not be damaged by the settlement of the structures.

Service Lines shall have a 10' minimum of horizontal separation. Where this separation is impractical, the Authority may permit other separation requirements, in accordance with the Colorado Department of Health Standards.

#### 4.1.4 Excavation, Bedding, and Backfill

All excavations for Service Line installations shall be adequately guarded with barricades and lights so as to protect the public from hazards per existing governmental requirements. Street, sidewalks, parkways, and other public or private property disturbed in the course of work shall be restored to their original condition in a manner satisfactory to the Authority.

The pipelines shall be bedded and backfilled in accordance with the applicable codes.

All excavations required for the installations of Service Line shall be open-trench work unless otherwise approved by the Authority.

#### 4.1.5 Costs

All Actual Costs, including, but not limited to, Authority Engineer/Inspector/Administrator time or expenses related to inspection and review, attorneys' fees, and any costs for uncovering or accessing work that was not inspected and approved by the Authority prior to being covered, shall be the sole responsibility of the Owner/ Developer. Time spent on infrastructure approval by the Authority and its consultants will be billed at \$95 per hour to the developer.

##### *4.1.5.1 Construction Deposit*

A deposit of \$10,000 will be paid to the Authority prior to construction and after design approval. This will be returned after all requirements are met and final acceptance is approved.

##### *4.1.5.2 Water Costs*

Water needed as part of the construction process shall be metered and will be charged at the current rate for bulk water. An Authority meter shall be rented from the Authority with a \$3,000 deposit paid.

#### 4.1.6 Inspection

Upon completion of the construction of Service Lines and prior connection to the Main, the Owner/Developer shall notify the Authority and allow for Authority inspection as provided in Section 3.1.10 of these Facilities Construction and Technical Standards. Service Lines shall not be connected to the Main until after the Authority's inspection and approval. The Authority may, at its sole discretion, oversee the connection of the Service Line to the Main.

#### 4.1.7 Operation and Maintenance

The Owner shall be responsible for maintaining the Service Line and related appurtenances from the Main to the structure to which the Service Line is attached as provided in Section 4.4.1 of the Authority Rules and Regulations.

### 4.2 Potable Water Service Lines

#### 4.2.1 Sizing

Sizing for Potable Water Service Lines shall be made in general conformance with AWWA Manual M11, "Sizing Water Service Lines and Meters".

#### 4.2.2 Location

All Potable Water Service Lines shall be laid at uniform grade and in straight alignment so as to have a minimum cover of 4½ feet from the final finish grade. A reference mark shall be placed on the curb above the Potable Water Service Line.

#### 4.2.3 Pressure Regulating and Relief Valves

All Potable Water Service Lines shall be equipped with a line-pressure regulating valve – except in areas specifically exempted by the Authority's Engineer. Pressure regulating valves shall be upstream of all connections to the Potable Water Service Line. Installation of the pressure regulating valves must be located inside of the home and be the first item on the service line as it enters the home. The pressure regulating valve shall be set as directed by the Owner/Developer.

A water pressure relief valve shall be installed in the internal water system of every property served by the Authority. The water pressure relief valve shall be provided with a discharge outlet line to a drain in any areas where unregulated water discharge could cause damage.

#### 4.2.4 Pipeline Material

##### *4.2.4.1 Potable Water Service Line Pipeline*

The Potable Water Service Line pipeline shall be ADS Potable Water Service Tubing (CTS) pipe SDR 9 and meet the requirements of ASTM D2737, AWWA C901, and NSF Standards 14 and 61. Pipe dimensions shall meet Copper Tubing Size (CTS) standards, unless otherwise specifically approved by the Authority. Fittings shall be brass or copper alloy. Stiffener fitting McDonald 6133T or similar must be used at all connections. No more than one coupling shall be installed in service lines.

##### *4.2.4.2 Corporation Stops*

Corporation stops shall be used for the connection of the Potable Water Service Line (2" and smaller) to the Potable Water Main. Corporation stops shall be brass and conform with AWWA C800. The inlet shall be standard AWWA corporation stop inlet thread and the outlet shall be compatible with SDR 9 service line. Corporation stop must be produced by McDonald or Ford, or an approved equivalent.

##### *4.2.4.3 Curb Stops*

Curb stops shall be placed on the inlet side of the meter pit for all Potable Water Service Lines 2" and smaller. Curb stops shall be brass and conform with AWWA C800. Curb stops shall be McDonald 76100-22 or approved equal. A reinforcement brick or concrete block must be installed at the base of the curb stop for reinforcement. The minimum depth is 4.5 ft. Curb stops may never be located in a driveway.

##### *4.2.4.4 Service Saddles*

All Potable Water service taps shall be made with a Ford double strap all brass or approved equal.

#### 4.2.5 Meters

#### *4.2.5.1 Location*

The water meter shall be placed in accordance with the applicable codes. Unless otherwise approved by the Authority, all water meters shall be housed in an exterior meter pit in accordance with the applicable codes. Meters pits are required to be located within the owner's property line.

#### *4.2.5.2 Meter Material*

All potable meters 2" and smaller shall be bronze case Sensus. Meters larger than 2" size shall be as approved by the Authority Engineer; normally Sensus compound type meters will be selected. All meters shall be provided by the Authority at the Owner/Developer's expense.

#### *4.2.5.3 Meter Pits*

For ¾" and 1" meters, pits shall have a circular reinforced barrel, as approved in advance by the Authority. The setting shall consist of a lower bell section with opening at the bottom to allow for entrance/exit of the service line. Barrel sections shall fit together allowing no visible gaps and the top section shall be shaped for placement of the meter box cover. Adjustable grade rings shall be of reinforced concrete or cast iron.

For 1½" and 2" meters, 48" or larger precast concrete manhole sections (conforming to ASTM C478). Larger size meter vaults shall be as approved by the Authority Engineer.

#### *4.2.5.4 Meter Pit Covers*

For ¾" and 1" meters, covers shall be constructed of cast iron with rubber or plastic inner frost lid. The top lid shall be of cast iron with a worm type lock operated by a pentagon head. The lid and cover shall be Ford Wabash No. W3 or approved equal.

For larger meter installations, the meter cover shall be Cast Iron 24X20 with a recessed port for meter transmitter.

#### *4.2.5.5 Meter Settings*

All ¾" and 1" meters shall be set with a copper setter having an internal angle curb valve on the inlet side. Yokes shall be Ford 80 series or approved equal. Meters larger than 1" shall have (sealed) valved bypasses and be set in accordance with the detail given or as approved by the Authority.

#### 4.2.6 Installation

Potable Service Lines shall be buried with an average cover of 4.5 feet and an absolute minimum cover of 4.0 feet. The Potable Water Service Lines shall not be installed closer than 10" horizontally to the Non-Potable Water Service Lines or Sewer Service Line. Tracer line is required from the main to the curb stop and from the curb stop to the house, and will be accessible through a locate box located by the curb stop. Warning tape must be installed 18" above the service line from the main to the home.

### 4.3 Non-Potable Water Service Lines

#### 4.3.1 Sizing

Sizing for Non-Potable Water Service Lines shall be made in general conformance with AWWA Manual M11, "Sizing Water Service Lines and Meters".

#### 4.3.2 Location

All Non-Potable Water Service Lines shall be laid at uniform grade and in straight alignment so as to have a minimum cover of 4½ feet from the final finish grade. A reference mark shall be placed on the curb above the Non-Potable Water Service Line.

#### 4.3.3 Pressure Regulating and Relief Valves

All Non-Potable Water Service Lines shall be equipped with a line-pressure regulating valve – except in areas specifically exempted by the Authority's Engineer. Pressure regulating valves shall be upstream of all connections to the Non-Potable Water Service Line. Installation of the pressure regulating valve in the meter pit is acceptable if the pit and piping are designed to permit convenient servicing of the meter. The pressure regulating valve shall be set as directed by the Owner/Developer. A water pressure relief valve shall be installed in the internal water system of every property served by the Authority. The valve shall be provided with a discharge outlet line to a drain in any areas where unregulated water discharge could cause damage.

#### 4.3.4 Pipeline Material

All Non-Potable Water Service Lines shall be of Purple plastic materials, as follows:

Three-fourths inch through 2” size shall be Purple polyethylene, non-jointed, conforming to AWWA C901, minimum Class 160 psi, using PE 2306, 3306, and 3406 material.

Pipes larger than 2” shall be Purple PVC. Three-inch size shall be Purple ASTM D2241 SDR 21, Class 200 psi. Larger sizes shall be Purple AWWA Class 150 AT\STM C900.

#### 4.3.5 Warning Notification

All Non-Potable Water Service Lines shall be installed with warning tapes or with the warning printed directly onto the pipe. Warning tapes shall be installed directly on top of the pipe longitudinally and shall be centered. Acceptable tape or printing directly on the pipe shall state: “NON-POTABLE LINE – DO NOT DRINK.”

#### 4.3.6 Meters

Three-fourths-inch and 1” non-potable water meters shall be installed per the standards below.

All non-potable water meters shall be provided by the Authority at the Owner/Developer’s expense.

The non-potable water meter pit cover shall have a large, embossed triangle and the words “NON-POTABLE – DO NOT DRINK” cast integrally.

#### 4.3.7 Yard Hydrants and Irrigation Connection

A yard hydrant or irrigation connection is required to be installed in the front of the home to be used for irrigation with a hose.

#### 4.3.8 Installation

Non-Potable Water Service Lines shall be buried with an average cover of 4.5 feet and an absolute minimum cover of 4.0 feet. The Non-Potable Water Service Lines shall not be installed closer than 10” horizontally to the Potable Water Service Lines or Sewer Service Line. No Non-Potable Water Service Lines shall be installed inside a building or within 5 feet of a building foundation or in the driveway. A marking tape with the words ‘NON-POTABLE LINE – DO NOT DRINK’ shall be installed just above the pipe. If

the non-potable water meter is not installed at the time of Non-Potable Water Service Lines installation in the right-of-way, a 1½” black PVC or ABS marker pipe, 6 feet long, shall be installed vertically at the end of the Non-Potable Water Service Lines as a marker. Tracer line is required from the main to the curb stop and from the curb stop to the first valve box and will be accessible in a locate box next to the Stop-And-Waste.

#### 4.4 Sewer Service Lines

##### 4.4.1 Sizing/Capacity

The size and slope of the Sewer Service Lines shall be subject to the approval of the Authority, but in no event shall the diameter be less than 4”. Minimum grade and slopes shall be as follows:

4” . . . .	2.00%
6” . . . .	1.00%
8” . . . .	0.60%

##### 4.4.2 Connection to the Sewer Main

Unless otherwise approved by the Authority, pre-installed wye fittings shall be used for the connection of the Sewer Service Line to the Sewer Main. If approved by the Authority, the connection of the Sewer Service Line to the Sewer Main shall be made as follows: If the Sewer main is 12” in diameter or less, the Owner/Developer shall, at his expense, install a saddle on up to 8” branches in the Sewer Main. Where the Sewer Main is greater than 12” in diameter, a neat hole may be cut into the Sewer Main, with an entry in the downstream direction at an angle of 45 degrees. The use of saddles is mandatory.

##### 4.4.3 Location

All Sewer Service Lines shall be laid horizontally as desired by the Owner/Developer, and approved in advance by the Authority, at grade to accommodate a 2 feet/second flow and so as to have a minimum separation of 10’ between the Sewer Service Line and the Potable Water Service Line and Non-Potable Water Service Line. A reference mark shall be placed on the curb above the Sewer Service Line.

##### 4.4.4 Pipeline Material

The Sewer Service Line pipe shall be PVC, with a thickness not less than SDR 35. Sewer Service Line pipe shall be green.

#### 4.4.5 Installation

The Sewer Service Line shall be water tight and on a constant grade in a straight line, and not closer than 5' from any bearing wall.

Sewer Service Line cleanouts are required, and shall conform to the applicable requirements. Cleanouts are required for any significant change in Sewer Service Line direction and at intervals no greater than 100'.

## ARTICLE 5 - OTHER FACILITIES

### **5.1 Construction of Grease and Other Interceptors**

Plans for grease and other interceptors shall be submitted to the Authority and must be approved prior to interceptor installation. The cost of reviewing and approving such plans, and inspection and approval of the installation shall be charged to the Developer, Owner, or Customer.

All grease and other interceptors and pre-treatment facilities shall be located as to be readily available and accessible for cleaning, maintenance, and inspection and shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be watertight, and, if necessary, as determined by the Authority, gastight and vented.

### **5.2 Subsurface Drain Lines**

Subsurface drains, where constructed around building foundations, shall be of white color PVC or black High Density Polyethylene (HDPE). Any subsurface drains installed in the same trench as the sanitary sewer shall be white color PVC.

ARTICLE 6 - EQUIVALENT RESIDENTIAL UNIT (EQR) SCHEDULES

6.1 EQR Schedules

Certain rates, fees, tolls, charges, and/or penalties of the Authority may be based on the EQR value assigned to the users of the Authority’s System. The base for EQR schedules is an average detached single-family residence, or its equivalent.

**TABLE 6.1  
EQUIVALENT RESIDENTIAL UNIT (EQR) SCHEDULE –  
WATER AND SEWER UTILITIES**

<u>Class of User</u>	<u>EQR</u>
A. RESIDENTIAL CLASSIFICATIONS	
1. Single-family Residential Units (per each)	1.0
Single-family Homes, individually billed mobile homes, mobile homes on single lots, and mobile homes established for permanent residences.	
Note: Subrental privileges of all kinds are prohibited.	
2. Multi-family Residential Units	
Apartments, condominiums, townhouses, and similar facilities in the same complex; all units are intended for long-term rental or ownership.	
• Small sized unit. Shall not have more than one bedroom and one bathroom.	0.5
• Medium sized unit. Shall not have more than 2 bedrooms or 2 bathrooms.	0.75
• Large sized unit. Shall not have more than 3 bedrooms and 2½ bathrooms.	0.90
• Any larger single unit.	1.0

Class of User

EQR

3. Transient Residential Units

Hotels, motels, mobile home parks, dormitories and similar facilities.

Note: Includes: laundry facilities in mobile homes; swimming pools and laundry facilities (except those in mobile homes) are additive; room counts shall include rooms furnished to employees; each billing unit shall have a minimum of one Administrator's unit.

a. Administrator's Unit (per each)	0.80
b. Motels, hotels and rooming houses without kitchen facilities	
- with not more than 2 bed spaces per room (per each rental room)	0.20
- with more than 2 bed spaces per room (per each room)	0.35
c. Motels with kitchen facilities	
- with not more than 2 bed spaces per unit (per each rental unit)	0.3
- with more than 2 bed spaces per unit (per each rental unit)	0.4
d. Dormitories (per each rental bed space)	0.1
e. Add for laundry facilities (or available hookup) in each building, % of total EQR served	20%
f. Mobile Homes in Park – with laundry	0.80/space

B. COMMERCIAL CLASSIFICATION

- Minimum of one EQR for all restaurants, food counters, snack bars, coffee stands.

1. Restaurants and Bars

Restaurants, bars, lounges, banquet rooms, and drive-ins

a. Restaurants and bars (per 10 seats)	1.0
b. Banquet Rooms (per 10 seats)	.4

<u>Class of User</u>	<u>EQR</u>
c. Drive-ins (per car stall)	.3
d. Drive through take out service window	0.5
2. Commercial Buildings	
Office buildings, retail sales buildings, multiple use buildings, laundromats, service stations, shops, garages and similar facilities.	
Note: No process water will be allowed to enter the sewer.	
a. Offices and office buildings (per 1,000 s.f. of gross floor area)	0.50
b. Retail sales area (per 1,000 s.f. of gross sales, display, storage and support areas)	0.30
c. Laundromats (per washing machine)	1.20
d. Service stations (a set of pumps is defined as 2 pumps regardless of the number of hoses)	
- first set of pumps	1.2
- each additional set of pumps (per set)	0.8
- add for each bay/rack where cars can be washed	1.4
e. Non-retail work areas such as garages, machine shops (per each 10 employees)	0.7
f. Movie theaters (per each 50 seats) and conference centers	1.0
C. CHURCH AND SCHOOL CLASSIFICATIONS	
1. Churches (per 100 seats)	1.0
Note: Rectories, social areas with kitchen facilities are additive	
2. Schools	
Day care centers, public and private day schools	
Note: Includes teachers, librarians, custodians and administrative personnel associated with the school function; administrative centers, warehouses, equipment (such as buses) repair and/or storage centers, swimming pools and similar facilities are additive.	

<u>Class of User</u>	<u>EQR</u>
a. Without gym and without cafeteria (per 50 students)	1.40
b. Without gym and with cafeteria or with gym and without cafeteria (per 50 students)	1.75
c. With gym and cafeteria (per 50 students)	2.10

D. MISCELLANEOUS CLASSIFICATIONS

1. Swimming pools and wading pools

Note: A permanent sign must be placed prominently at all pool filter installations stating that pools are not to be drained without permission from the Authority Administrator, that pool draining rates will be subject to approval of the Authority, and that draining shall be limited to the hours determined by the Authority.

a. Private pools associated with single-family residential units (per 40,000 gallons of pool volume)	0.40
b. Pools associated with multi-family and transient residential units (per 40,000 gallons of pool volume)	0.80
c. Commercial and public pools. Total EQR to be computed from pool volume and per capita capacity as follows:	
• first 40,000 gallons of pool volume	1.05
• each additional 40,000 gallon capacity	0.75

2. Recreational Vehicle Waste Disposal Stations

The operator of the disposal facility shall provide a means acceptable to the Authority of counting the number of times the disposal facilities are used.

The Authority shall review and approve charges made to users of dumping facilities by facility owners; no Tap fees will be assessed for camper dump facilities, and the Authority reserves the right to cease service to such facilities at any time.

<u>Class of User</u>	<u>EQR</u>
3. Medical Hospital	
Note: Includes staff and administrative personnel associated with the hospital function.	
• per bed	0.60
4. Public Restrooms (per toilet or urinal)	0.20
E. OTHER CLASSIFICATIONS	
Equivalents shall be established on an individual basis for all users other than those identified in Classifications A, B, C, and D above. Industrial users will be subject to the requirements of the Environmental Protection Agency as those requirements pertain to assessment of users charges and cost recovery (refer to 40 C.F.R., Section 25 (1987)).	
F. GENERAL NOTES	
1. Each Customer of the system will be charged a minimum of 1 EQR for purposes of establishing fixed costs.	

# Profit and Loss

## Kiowa Water and Wasterwater Authority

January 1-March 5, 2026

DISTRIBUTION ACCOUNT	TOTAL
<b>Income</b>	
4010 Water & Sewer - Income	
4012 Bulk Water Income	520.00
4015 Transfer Fees	700.00
4020 Water & Sewer Fees Collected	100,541.54
<b>Total for 4010 Water &amp; Sewer - Income</b>	<b>\$101,761.54</b>
<b>Total for Income</b>	<b>\$101,761.54</b>
<b>Gross Profit</b>	
<b>\$101,761.54</b>	
<b>Expenses</b>	
6300 Advertising & Marketing	
6301 Public Notices	31.88
<b>Total for 6300 Advertising &amp; Marketing</b>	<b>\$31.88</b>
6500 Insurance	
6501 CIRSA - PC & Liability	17,542.86
<b>Total for 6500 Insurance</b>	<b>\$17,542.86</b>
6630 Dues & Subscriptions	3,281.34
6730 Repairs & Maintenance	
6731 Infrastructure Repairs & Maint. - Sewer	3,032.05
6732 Infrastructure Repairs & Maint. - Water	4,667.28
6733 Trash - HBS (95 Ute Ave)	40.09
<b>Total for 6730 Repairs &amp; Maintenance</b>	<b>\$7,739.42</b>
6740 Specific Use Supplies	\$200.00
6741 Core & Main - Sewer	1,694.68
<b>Total for 6740 Specific Use Supplies</b>	<b>\$1,894.68</b>
6800 General Office Expenses	
6805 Postage	176.96
6840 Computer supplies & Software	1,060.00
<b>Total for 6800 General Office Expenses</b>	<b>\$1,236.96</b>
6900 Utilities	
6906 Utilities- Power - CORE (Sewer)	1,721.58
6907 Utilities- Power - CORE (Water)	2,990.04
<b>Total for 6900 Utilities</b>	<b>\$4,711.62</b>
7000 All Professional Services	
7010 Professional Services - Legal	7,902.30
7040 Professional Services - Consulting	6,684.50
7050 Professional Services - ORC	
7051 ORC - Monthly Contract Fee	14,412.00
<b>Total for 7050 Professional Services - ORC</b>	<b>\$14,412.00</b>

# Profit and Loss

## Kiowa Water and Wasterwater Authority

January 1-March 5, 2026

DISTRIBUTION ACCOUNT	TOTAL
7060 Professional Services - Lab Services	
7061 Sewer - Labs	1,386.00
7062 Water - Labs	822.60
<b>Total for 7060 Professional Services - Lab Services</b>	<b>\$2,208.60</b>
<b>Total for 7000 All Professional Services</b>	<b>\$31,207.40</b>
7070 TOK Operating contract	21,157.47
7095 Utility Notifications & Locates	234.50
7100 Bank Charges & Fees	35.69
<b>Total for Expenses</b>	<b>\$89,073.82</b>
<b>Net Operating Income</b>	<b>\$12,687.72</b>
Other Income	
8000 Interest Earned	2,188.73
<b>Total for Other Income</b>	<b>\$2,188.73</b>
Other Expenses	
4021 Meter Deposit Refund	109.02
<b>Total for Other Expenses</b>	<b>\$109.02</b>
<b>Net Other Income</b>	<b>\$2,079.71</b>
<b>Net Income</b>	<b>\$14,767.43</b>

# Balance Sheet

## Kiowa Water and Wasterwater Authority

As of March 5, 2026

DISTRIBUTION ACCOUNT	TOTAL
<b>Assets</b>	
Current Assets	
Bank Accounts	
1010 KWWA Primary Checking (522)	164,194.14
1020 KWWA Money Market (514)	\$0.00
1310 Water Reserve Acct	184,803.45
1320 Wastewater Reserve Acct	184,803.54
<b>Total for 1020 KWWA Money Market (514)</b>	<b>\$369,606.99</b>
1050 Cash on hand	137.87
<b>Total for Bank Accounts</b>	<b>\$533,939.00</b>
Accounts Receivable	
1100 Accounts Receivable	52,022.00
1120 Water Users	12,750.00
1130 Water Users WW	10,601.00
<b>Total for Accounts Receivable</b>	<b>\$75,373.00</b>
Other Current Assets	
1490 Uncategorized Asset	0.00
<b>Total for Other Current Assets</b>	<b>\$0.00</b>
<b>Total for Current Assets</b>	<b>\$609,312.00</b>
Fixed Assets	
1540 Equipment and Furniture	
1541 Equipment and Furnitur	13,333.00
1542 Equipment wastewater	13,333.00
<b>Total for 1540 Equipment and Furniture</b>	<b>\$26,666.00</b>
1550 Buildings	
1560 Investments in Capital Assets	13,169.00
1570 Land and Improvements	1,060,684.24
1571 Land Wastewater	9,290.00
<b>Total for 1570 Land and Improvements</b>	<b>\$9,290.00</b>
1590 Enterprise System Assets	
1591 Water System	3,495,089.00
1592 Sewer System wastewater	2,153,845.00
<b>Total for 1590 Enterprise System Assets</b>	<b>\$5,648,934.00</b>
1600 Accumulated Depreciation	
1601 Accumulated Depreciation	-\$798,657.00
1602 Accum Deprec wastewater	-71,794.84
1602 Accum Deprec wastewater	-925,395.40
<b>Total for 1600 Accumulated Depreciation</b>	<b>-\$1,795,847.24</b>
<b>Total for Fixed Assets</b>	<b>\$4,962,896.00</b>
<b>Total for Assets</b>	<b>\$5,572,208.00</b>

# Balance Sheet

## Kiowa Water and Wasterwater Authority

As of March 5, 2026

DISTRIBUTION ACCOUNT	TOTAL
Liabilities and Equity	
Liabilities	
Current Liabilities	
Accounts Payable	
2000 Accounts Payable (A/P)	12,361.99
<b>Total for Accounts Payable</b>	<b>\$12,361.99</b>
Credit Cards	
2010 FSB Visa (3843)	6.35
<b>Total for Credit Cards</b>	<b>\$6.35</b>
<b>Total for Current Liabilities</b>	<b>\$12,368.34</b>
Long-term Liabilities	
2600 Bond Principle Water	2,953,799.35
2610 Bond Principle-Sewer	1,825,984.80
2620 CURRENT PORTION OF LT DEBT Water	0.00
2630 CURRENT PORTION OF LT DEBT Wastewater	0.00
2700 Meter Deposits	13,743.72
<b>Total for Long-term Liabilities</b>	<b>\$4,793,527.87</b>
<b>Total for Liabilities</b>	<b>\$4,805,896.21</b>
Equity	
3150 Opening Balance Equity	0.00
3300 Retained Earnings	751,544.36
Net Income	14,767.43
<b>Total for Equity</b>	<b>\$766,311.79</b>
<b>Total for Liabilities and Equity</b>	<b>\$5,572,208.00</b>

# KIOWA WATER AND WASTEWATER AUTHORITY GENERAL FUND BUDGET

## 2026 MONTHLY BUDGET PERCENTAGES

GL ACCT	REVENUE	2026 Budget	YTD	%
4011-4016	Categorized Income	\$10,000	\$1,220	12%
4200	Grants & Contracts	\$0	\$0	
4020	Water and Sewer fees collected	\$700,000	\$101,542	15%
4013	Collected Tap Fees	\$26,000	\$0	
4800	CORA fees collected	\$100	\$0	
	<b>TOTAL REVENUE</b>	\$736,100	\$102,762	14%
	<b>CURRENT ASSETS</b>	<b>2026 Budget</b>	<b>YTD</b>	<b>%</b>
8100	Sale of Assets	\$0	\$0	
1310	Water Reserve Account	\$213,250	\$184,803	87%
1320	Wastewater Reserve Account	\$213,250	\$184,803	87%
	<b>TOTAL CURRENT ASSETS</b>	\$426,500	\$369,606	87%
	<b>EXPENDITURES</b>	<b>2026 Budget</b>	<b>YTD</b>	<b>%</b>
7100	Bank CC & EFT Fees	\$125	\$36	29%
7710	Bond Interest Sewer	\$70,000	\$0	
7720	Bond Interest Water	\$110,000	\$0	
2610	Bond Principal Sewer	\$36,000	\$0	
2600	Bond Principal Water	\$57,000	\$0	
6840	Computer Supplies & Software	\$3,000	\$1,060	35%
6630	Dues & Subscriptions	\$2,250	\$3,281	146%
4202	EIAF 9647 - Well Redundancy Project Grant	\$0	\$0	
6731	Infrastructure Repairs & Maintenance - Sewer	\$100,000	\$3,032	3%
6730	Infrastructure Repairs & Maintenance - Water	\$100,000	\$4,667	5%
6501	Insurance (Property & Liability)	\$15,580	\$17,543	113%
7060	Lab Fees	\$4,000	\$2,209	55%
6820	Office Supplies	\$500	\$0	
6805	Postage	\$3,000	\$177	6%
6731.1	Professional - Hauling	\$15,000	\$0	
7031	Professional - Accounting	\$2,500	\$0	
7032	Professional - Auditor	\$16,500	\$0	
7040	Professional - Consultants	\$15,000	\$6,685	45%
7080	Professional - Grant Writer	\$0	\$0	
7020	Professional - IT	\$0	\$0	
7010	Professional - Legal	\$32,000	\$7,902	25%
7050	Professional - ORC	\$62,000	\$14,412	23%
7070	Professional - TOK Op Agreement	\$78,420	\$21,157	27%
7090	Professional - Other	\$400	\$0	
6301	Public Notices & Advertising	\$250	\$32	13%
6740	Specific Use Supplies	\$40,000	\$1,894	5%
7140	Taxes & Licenses	\$3,200	\$0	
6733	Trash & Janitorial	\$525	\$40	8%
7990	Uncategorized Expenses	\$1,500	\$109	7%

6902	Utilities - Heat - pump house	\$0	\$0	
6940 & 6941	Utilities - Telephone & Internet	\$2,200	\$0	
7095	Utility Notifications & Locates	\$300	\$235	78%
6906	Utilities - Power (Sewer)	\$15,000	\$1,722	11%
6907	Utilities - Power (Water)	\$20,000	\$2,990	15%
<b>TOTAL EXPENDITURES</b>		<b>\$806,250</b>	<b>\$89,181</b>	<b>11%</b>

# System Totals Report

Kiowa Water & Wastewater Authority

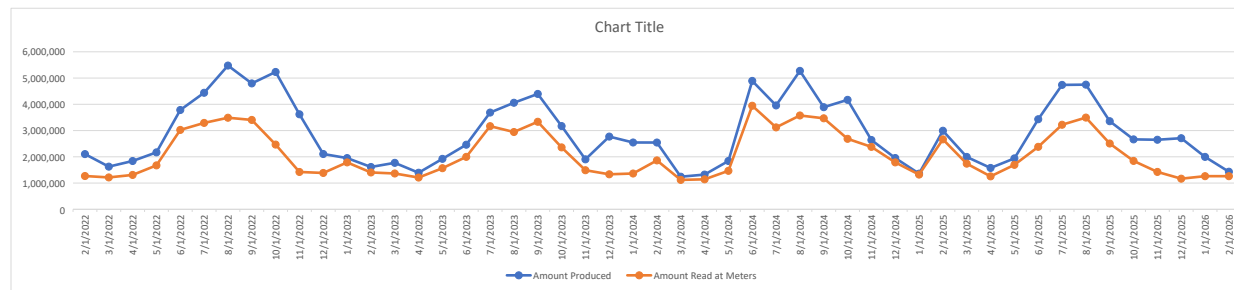
<b>Water Pumped This Month</b>	<b>1,432,000 Gallons</b>
<b>Water Sold This Month</b>	<b>1,262,106 Gallons</b>
<b>Water Loss</b>	<b>169,894 Gallons</b>
<b>Water Loss (%)</b>	<b>11.86 %</b>

	Amount (\$)	# Of Accounts
Total Water	23,538.92	363
Total Sewer	27,425.35	359
Total Adjustments	16.72	2
Total Prepayment	1,083.00	361
Total Meter Surcharge	12.00	4
<b>Total Current Charges</b>	<b>52,075.99</b>	<b>363</b>
Amount Past Due 1-30 Days	6,728.20	59
Amount Past Due 31-60 Days	1,714.94	17
Amount Past Due Over 60 Days	4,412.39	9
Amount Of Overpayments/Prepayments	(3,553.15)	29
<b>Total Receivables</b>	<b>61,378.37</b>	<b>354</b>

Total Receipts On Account	52,819.10	330
Net Change in Deposits	0.00	0
Amount of All Deposits	14,471.58	132
Amount of All Deposit 2	1,526.28	14
Turned Off Accounts (Amount Owed)	0.00	14
Collection Accounts (Amount Owed)	0.00	14
Number Of Unread (Turned On) Meters		
Average Usage For Active Meters	3,477	363
Average Water Charge For Active Meters	64.85	363

Usage Groups	Gallons	# Of Accounts	Usage	Gallons	% Of Usage	% Of Sales
Over 50,000		0		0	0.00	0.00
40,001-50,000		2		88,000	6.97	2.17
30,001-40,000		0		0	0.00	0.00
20,001-30,000		1		26,000	2.06	0.67
10,001-20,000		15		225,474	17.87	6.26
8,001-10,000		12		107,076	8.48	4.02
6,001-8,000		14		95,157	7.54	4.29
4,001-6,000		55		270,183	21.41	15.31
2,001-4,000		119		350,803	27.80	30.61
1-2,000		97		99,413	7.88	24.51
Zero Usage		48		0	0.00	12.16
=====						
<b>Total Meters</b>		<b>363</b>		<b>1,262,106</b>	<b>100.00</b>	<b>100.00</b>

Date Read	Amount Produced	Amount Read at Meters	% Loss	Comments
2/15/2026	1,432,000	1,262,106	0.12	
1/15/2026	1,997,000	1,263,000	0.36	
12/15/2025	2,709,000	1,166,926	0.56	Some leakage from tank - unknown how much loss. Several meters still reading "0"
11/15/2025	2,650,000	1,424,837	0.46	
10/15/2025	2,664,000	1,844,012	-0.30	Leak on Hwy 86 near Museum
9/15/2025	3,356,000	2,506,495	-0.25	
8/15/2025	4,749,000	3,494,365	-0.25	23,400 Gallons used at Fairgrounds
7/15/2025	4,739,000	3,221,053	-0.32	Several Leaks on main lines
6/15/2025	3,431,000	2,380,209	-0.30	Break in line at Fairgrounds
5/15/2025	1,940,000	1,694,042	-0.13	152,000 Gallons used for flushing hydrants & a house fire on 5/31
4/15/2025	1,576,000	1,255,327	-0.20	
3/15/2025	1,996,000	1,739,431	-0.12	
2/15/2025	2,993,000	2,665,292	-0.10	
1/16/2025	1,359,000	1,323,334	-0.02	
12/16/2024	1,954,000	1,787,811	-0.08	
11/18/2024	2,640,000	2,378,728	-0.09	
10/16/2024	4,170,000	2,685,349	-0.35	
9/17/2024	3,890,000	3,467,023	-0.10	
8/17/2024	5,273,000	3,574,938	-0.28	
7/15/2024	3,957,000	3,120,567	-0.21	
6/16/2024	4,891,000	3,945,175	-0.19	
5/16/2024	1,841,000	1,466,357	-0.20	
4/15/2024	1,323,000	1,142,435	-0.14	
3/15/2024	1,242,000	1,120,604	-0.10	
2/15/2024	2,544,000	1,862,942	-0.27	
1/15/2024	2,545,413	1,363,972	-0.46	Tank overflowed 600,000 gallons
12/15/2023	2,770,431	1,334,106	-0.52	Tank overflowed 800,000 gallons
11/15/2023	1,903,915	1,489,086	-0.22	
10/15/2023	3,171,434	2,358,906	-0.26	
9/15/2023	4,395,685	3,334,744	-0.24	
8/15/2023	4,059,000	2,944,885	-0.27	
7/15/2023	3,685,801	3,167,462	-0.14	
6/15/2023	2,460,683	1,997,680	-0.19	
5/15/2023	1,922,232	1,566,597	-0.19	
4/15/2023	1,393,549	1,210,031	-0.13	
3/15/2023	1,770,575	1,364,934	-0.23	
2/15/2023	1,612,972	1,404,234	-0.13	
1/15/2023	1,952,000	1,787,778	-0.08	
12/15/2022	2,107,000	1,384,995	-0.34	
11/15/2022	3,620,000	1,423,056	-0.61	
10/15/2022	5,232,000	2,466,288	-0.53	
9/15/2022	4,796,000	3,404,880	-0.29	
8/15/2022	5,476,185	3,488,673	-0.36	
7/16/2022	4,439,253	3,291,222	-0.26	
6/15/2022	3,783,063	3,024,482	-0.20	
5/15/2022	2,169,388	1,673,645	-0.23	
4/15/2022	1,840,344	1,309,851	-0.29	
3/15/2022	1,625,936	1,214,902	-0.25	
2/15/2022	2,103,810	1,268,544	-0.40	



# Proposal

Updated  
2-26 *af*

**FRONTIER FENCE** *Bill Sewald @Hotmail 3929*  
42102 Comanche Creek Road  
Kiowa CO 80117  
(303) 688-1466  
*.com*

2-23-26

PROPOSAL SUBMITTED TO <i>Kiowa Water Wastewater Authority</i>		PHONE <i>621-2366</i>	DATE <del><i>2-11-25</i></del>
STREET <i>S Davidson @ Town Of Kiowa .com</i>		JOB NAME <i>Security Fence</i>	
CITY, STATE and ZIP CODE <i>D G Cabehut @ Kiowa Water .com</i>		JOB LOCATION <i>Kiowa Water Tank</i>	
ARCHITECT <i>S. Davidson</i>	DATE OF PLANS		JOB PHONE

We hereby submit specifications and estimates for:

- Supply and erect 495 Feet of seven foot tall security fence around water Tank - Hwy 86
- 25 Feet outside of support columns
  - East side to follow existing property line fence
  - 2 1/2" line posts
  - 3" Terminal posts } 40 wt.
  - 1 5/8" Top rail } Posts set in concrete
  - 72" Tall, 9 gauge chain link fabric
  - 7 gauge bottom tension wire
  - Three strands of barbed wire on top
  - 20' double drive swing gates

*af*

Fifteen Thousand two hundred fifty dollars \$15,250-

We Propose hereby to furnish material and labor — complete in accordance with above specifications, for the sum of:

~~Fourteen Thousand Two hundred fifty~~ dollars (\$ ~~14,250-~~ )

Payment to be made as follows:

Due upon completion

All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from above specifications involving extra costs will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance. Our workers are fully covered by Workman's Compensation Insurance.

Authorized Signature

*Bill Sewald*

Note: This proposal may be withdrawn by us if not accepted within 21 days.

**Acceptance of Proposal**—The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Signature \_\_\_\_\_

Date of Acceptance: \_\_\_\_\_

Signature \_\_\_\_\_

Tap Fee Comparison of Municipalities

Municipality	Water	Sewer	Irrigation	4d fees charged	Population	Notes
<b>Kiowa</b>	3/4" \$6,500.00 1" \$9,500.00 1 1/2" \$13,000.00 2" \$20,000.00 3" TBD	3/4" \$6,500.00 1" \$9,500.00 1 1/2" \$13,000.00 2" \$20,000.00 3" TBD	3/4" \$6,500.00 1" \$9,500.00 1 1/2" \$13,000.00 2" \$20,000.00 3" TBD	Tap inspection fee: \$150.00 Current cost to district Meter Installation Service Line/Meter Pit Inspection \$180.00	766	None
<b>Wiggins</b>	\$35,000 \$40,250 \$53,270 \$70,905 \$133,175	5/8" \$10,000 3/4" \$12,000 1" \$16,000 1 1/2" \$35,188 2" \$48,332 3" \$62,700 4" \$100,416 6" \$160,688	N/A	N/A	2,887	None
<b>Olathe</b>	1 1/2" \$13,000 2" \$22,000 Larger than 6 inches shall be allowed unless adequate service is available and; a tap fee in an amount determined by the Town to be reasonable for the proposed use is paid.	4" or less \$5,000 6" \$9,000	N/A	Water taps larger than 2" shall not be allowed unless adequate services is available, and a tap fee in the amount determined by the Town to be reasonable for the proposed use is paid. Sewer taps larger than 6 inches shall be allowed unless adequate service is available and; a tap fee in an amount determined by the Town to be reasonable for the proposed use is paid.	1,900	Last updated in 2022
<b>Lake City</b>	1" \$10,667 1 1/2" \$24,000 2" \$45,778	3/4" or smaller \$7,000 1" \$10,244 1 1/2" \$25,000 2" \$45,778	N/A	N/A	413	None
<b>Monument</b>	\$23,080 \$41,030 \$82,320 \$123,090	None	3/4" \$23,080 1" \$41,030 1 1/2" \$82,320 2" \$123,090	Water line is indoor use or combined indoor/outdoor, or they can get an irrigation only. 3/4" MFI indoor use only, with separate irrigation - \$14,000	10339	Monument charges for water meter installation and price is based off size of meter. See fee schedule.
<b>Hugo</b>	\$12,500 \$2,000	Flat \$1,000	N/A	Over 1" requires PW Director and Board Approval	734	Last updated December 2025
<b>Akron</b>	3/4" \$2,000 1" \$2,200 1 1/2" \$2,400 2" \$2,600	3/4" - 1" \$7,500 1 1/2" & larger - will be priced by assessment	N/A	Water Availability and Plant Expansion Fee is charged in addition to the water tap fee. 3/4" \$9,375.00 1" \$16,687.50 1 1/2" \$27,500.00 2" \$37,500.00 3" \$50,000.00 4" \$65,000.00 5" \$80,000.00 6" \$95,000.00 7" \$110,000.00 8" \$125,000.00 9" \$140,000.00 10" \$155,000.00 11" \$170,000.00 12" \$185,000.00 13" \$200,000.00 14" \$215,000.00 15" \$230,000.00 16" \$245,000.00 17" \$260,000.00 18" \$275,000.00 19" \$290,000.00 20" \$305,000.00 21" \$320,000.00 22" \$335,000.00 23" \$350,000.00 24" \$365,000.00 25" \$380,000.00 26" \$395,000.00 27" \$410,000.00 28" \$425,000.00 29" \$440,000.00 30" \$455,000.00 31" \$470,000.00 32" \$485,000.00 33" \$500,000.00 34" \$515,000.00 35" \$530,000.00 36" \$545,000.00 37" \$560,000.00 38" \$575,000.00 39" \$590,000.00 40" \$605,000.00 41" \$620,000.00 42" \$635,000.00 43" \$650,000.00 44" \$665,000.00 45" \$680,000.00 46" \$695,000.00 47" \$710,000.00 48" \$725,000.00 49" \$740,000.00 50" \$755,000.00 51" \$770,000.00 52" \$785,000.00 53" \$800,000.00 54" \$815,000.00 55" \$830,000.00 56" \$845,000.00 57" \$860,000.00 58" \$875,000.00 59" \$890,000.00 60" \$905,000.00 61" \$920,000.00 62" \$935,000.00 63" \$950,000.00 64" \$965,000.00 65" \$980,000.00 66" \$995,000.00 67" \$1,010,000.00 68" \$1,025,000.00 69" \$1,040,000.00 70" \$1,055,000.00 71" \$1,070,000.00 72" \$1,085,000.00 73" \$1,100,000.00 74" \$1,115,000.00 75" \$1,130,000.00 76" \$1,145,000.00 77" \$1,160,000.00 78" \$1,175,000.00 79" \$1,190,000.00 80" \$1,205,000.00 81" \$1,220,000.00 82" \$1,235,000.00 83" \$1,250,000.00 84" \$1,265,000.00 85" \$1,280,000.00 86" \$1,295,000.00 87" \$1,310,000.00 88" \$1,325,000.00 89" \$1,340,000.00 90" \$1,355,000.00 91" \$1,370,000.00 92" \$1,385,000.00 93" \$1,400,000.00 94" \$1,415,000.00 95" \$1,430,000.00 96" \$1,445,000.00 97" \$1,460,000.00 98" \$1,475,000.00 99" \$1,490,000.00 100" \$1,505,000.00	1,757	Last updated 2024
<b>Rico</b>	3/4" \$12,500 1" \$22,500 1 1/4" \$32,500 1 1/2" \$42,500 2" \$52,500 3" \$62,500	None	N/A	Street Improvement Fee: 3/4" 1 1" 1.67 1 1/2" 2.5 2" 3.33 3" 4.17 4" 5 5" 5.83 6" 6.67	3,33	Water Taps shall be subject to a minimum fee as shown here in this Tap Fee Schedule, and applicants shall be required to submit a water demand analysis for the proposed project. The Building Official shall require an additional fee over and above the minimum fee as indicated by the water demand analysis.
<b>Breckenridge</b>	In-town (first 2,000 sf) \$19,815.33 Out of town (1.5-in-town PIP meter; first 2,000 sf) \$24,769.17	None	N/A	Breck uses a PIP (Plant Improvement Fee) rate increase that increases 10% annually.	5,190	None
<b>La Jara</b>	Residential \$2,500 Commercial \$3,500	Residential \$1,000 Commercial \$1,500	N/A	N/A	730	None
<b>Kersey</b>	5/8" \$14,000 3/4" \$21,000 1" \$28,000 1 1/2" \$70,000 2" \$112,000 3" \$168,000	5/8" \$6,000 3/4" \$9,000 1" \$16,000 1 1/2" \$35,000 2" \$55,000 3" \$85,000	N/A	Website to Central Weld County. Link to fees on website: <a href="https://cmw.revize.com/revize/kersey/Documents/Department/Administration/Department/FeeSchedule/2020Information/2020P206%20Schedule.pdf?1=202061291402906&amp;=202061291402906">https://cmw.revize.com/revize/kersey/Documents/Department/Administration/Department/FeeSchedule/2020Information/2020P206%20Schedule.pdf?1=202061291402906&amp;=202061291402906</a>	1,500	None
<b>Monte Vista</b>	\$2,000 \$3,500 \$5,000 \$7,000 \$10,000 \$15,000 \$21,000 \$28,000 \$35,000 \$45,000 \$55,000 \$70,000 \$85,000 \$105,000 \$125,000 \$150,000 \$175,000 \$210,000 \$245,000 \$280,000 \$320,000 \$360,000 \$400,000 \$450,000 \$500,000 \$550,000 \$600,000 \$650,000 \$700,000 \$750,000 \$800,000 \$850,000 \$900,000 \$950,000 \$1,000,000 \$1,050,000 \$1,100,000 \$1,150,000 \$1,200,000 \$1,250,000 \$1,300,000 \$1,350,000 \$1,400,000 \$1,450,000 \$1,500,000 \$1,550,000 \$1,600,000 \$1,650,000 \$1,700,000 \$1,750,000 \$1,800,000 \$1,850,000 \$1,900,000 \$1,950,000 \$2,000,000 \$2,050,000 \$2,100,000 \$2,150,000 \$2,200,000 \$2,250,000 \$2,300,000 \$2,350,000 \$2,400,000 \$2,450,000 \$2,500,000 \$2,550,000 \$2,600,000 \$2,650,000 \$2,700,000 \$2,750,000 \$2,800,000 \$2,850,000 \$2,900,000 \$2,950,000 \$3,000,000 \$3,050,000 \$3,100,000 \$3,150,000 \$3,200,000 \$3,250,000 \$3,300,000 \$3,350,000 \$3,400,000 \$3,450,000 \$3,500,000 \$3,550,000 \$3,600,000 \$3,650,000 \$3,700,000 \$3,750,000 \$3,800,000 \$3,850,000 \$3,900,000 \$3,950,000 \$4,000,000 \$4,050,000 \$4,100,000 \$4,150,000 \$4,200,000 \$4,250,000 \$4,300,000 \$4,350,000 \$4,400,000 \$4,450,000 \$4,500,000 \$4,550,000 \$4,600,000 \$4,650,000 \$4,700,000 \$4,750,000 \$4,800,000 \$4,850,000 \$4,900,000 \$4,950,000 \$5,000,000 \$5,050,000 \$5,100,000 \$5,150,000 \$5,200,000 \$5,250,000 \$5,300,000 \$5,350,000 \$5,400,000 \$5,450,000 \$5,500,000 \$5,550,000 \$5,600,000 \$5,650,000 \$5,700,000 \$5,750,000 \$5,800,000 \$5,850,000 \$5,900,000 \$5,950,000 \$6,000,000 \$6,050,000 \$6,100,000 \$6,150,000 \$6,200,000 \$6,250,000 \$6,300,000 \$6,350,000 \$6,400,000 \$6,450,000 \$6,500,000 \$6,550,000 \$6,600,000 \$6,650,000 \$6,700,000 \$6,750,000 \$6,800,000 \$6,850,000 \$6,900,000 \$6,950,000 \$7,000,000 \$7,050,000 \$7,100,000 \$7,150,000 \$7,200,000 \$7,250,000 \$7,300,000 \$7,350,000 \$7,400,000 \$7,450,000 \$7,500,000 \$7,550,000 \$7,600,000 \$7,650,000 \$7,700,000 \$7,750,000 \$7,800,000 \$7,850,000 \$7,900,000 \$7,950,000 \$8,000,000 \$8,050,000 \$8,100,000 \$8,150,000 \$8,200,000 \$8,250,000 \$8,300,000 \$8,350,000 \$8,400,000 \$8,450,000 \$8,500,000 \$8,550,000 \$8,600,000 \$8,650,000 \$8,700,000 \$8,750,000 \$8,800,000 \$8,850,000 \$8,900,000 \$8,950,000 \$9,000,000 \$9,050,000 \$9,100,000 \$9,150,000 \$9,200,000 \$9,250,000 \$9,300,000 \$9,350,000 \$9,400,000 \$9,450,000 \$9,500,000 \$9,550,000 \$9,600,000 \$9,650,000 \$9,700,000 \$9,750,000 \$9,800,000 \$9,850,000 \$9,900,000 \$9,950,000 \$10,000,000	1" in city limits \$2,000 1" out of city limits \$3,500	N/A	N/A	4,030	None
<b>Parker</b>	1" \$21,050 1 1/2" \$42,100 2" \$63,150 3" \$84,200 4" \$105,250 5" \$126,300 6" \$147,350 7" \$168,400 8" \$189,450 9" \$210,500 10" \$231,550 11" \$252,600 12" \$273,650 13" \$294,700 14" \$315,750 15" \$336,800 16" \$357,850 17" \$378,900 18" \$399,950 19" \$421,000 20" \$442,050 21" \$463,100 22" \$484,150 23" \$505,200 24" \$526,250 25" \$547,300 26" \$568,350 27" \$589,400 28" \$610,450 29" \$631,500 30" \$652,550 31" \$673,600 32" \$694,650 33" \$715,700 34" \$736,750 35" \$757,800 36" \$778,850 37" \$799,900 38" \$820,950 39" \$842,000 40" \$863,050 41" \$884,100 42" \$905,150 43" \$926,200 44" \$947,250 45" \$968,300 46" \$989,350 47" \$1,010,400 48" \$1,031,450 49" \$1,052,500 50" \$1,073,550 51" \$1,094,600 52" \$1,115,650 53" \$1,136,700 54" \$1,157,750 55" \$1,178,800 56" \$1,199,850 57" \$1,220,900 58" \$1,241,950 59" \$1,263,000 60" \$1,284,050 61" \$1,305,100 62" \$1,326,150 63" \$1,347,200 64" \$1,368,250 65" \$1,389,300 66" \$1,410,350 67" \$1,431,400 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# Kiowa Water & Wastewater Authority Conceptual Water Plan

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**Prepared for:**  
Kiowa Water & Wastewater  
Authority (KWWA)

**Prepared by:**  
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Denver, CO 80211  
303-480-1700

**DRAFT December 2025**



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- A. Findings of the Colorado Ground Water Commission
- B. Opinions of Probable Capital Costs

## **KIOWA WATER & WASTEWATER AUTHORITY CONCEPTUAL WATER PLAN**

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### **1.0 SUMMARY OF MAJOR CONCLUSIONS**

1. The water system serving the Kiowa Water and Wastewater Authority (KWWA) requires a new groundwater well for redundancy and to meet future development water demands. It is recommended that a new Arapahoe Aquifer well be drilled and equipped with a new pump and controls.
2. A new chlorine disinfection system, metering, and valves should be installed in a new building. The need for additional water treatment will be assessed after water quality sampling of the new well, opinions of probable costs were prepared with and without treatment for iron and manganese.
3. The new well and new chlorine building can be located at the site of the existing well and booster pump station.
4. The estimated costs to address these improvements range between +/- 30 percent of \$4.27 million without iron and manganese treatment and \$5.96 million with iron and manganese treatment. Each scenario includes an allowance for fees for typical requirements encountered if grants and loans are received from the Colorado Department of Public Health and Environment.
5. Additional studies should be undertaken to explore opportunities for additional production from the Kiowa Creek alluvium even though such uses will require the prior approval of a replacement plan from the Colorado Ground Water Commission.
6. This report reviewed growth projections based on a 20-year planning horizon based on published growth rates, which is the time frame often requested when federally supported grant and loan options are reviewed. Other KWWA and Town consultants have projected the water demand for a future buildout condition. With the assumed growth projections, the buildout water demand would not occur within the 20-year planning horizon.

### **2.0 OBJECTIVES**

The water system serving the existing customers in the Town of Kiowa (Town) has only one current operational groundwater well. The Colorado Department of Public Health and Environment (CDPHE) requires that water systems have at least two wells to provide redundancy of supply.

In addition, future development in or near the KWWA service area will impose an additional water demand on the Town's water system.

The objectives of this report were to:

1. Evaluate the existing water system to determine if the existing pumping and storage tank elements of the system can serve future development.
2. Determine a possible location of a new groundwater well and provide a conceptual level design of a new well at this location to address the redundancy requirement.

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### 3.0 INTRODUCTION

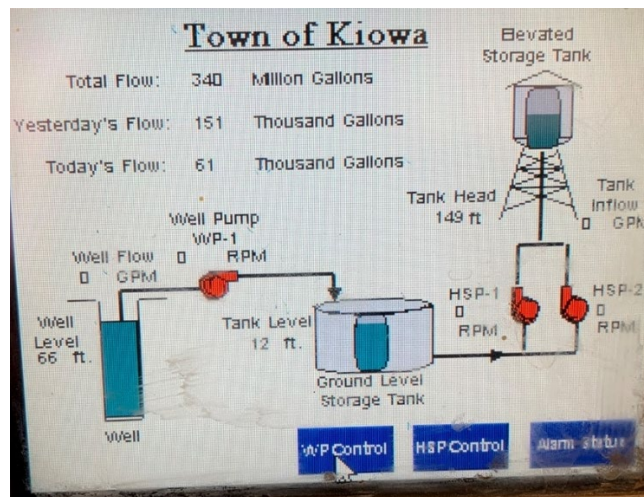
The Town is served with potable water provided by the KWWA. The KWWA was formed in 2013 to address the financial aspects of the water and sewer systems that had been previously built by the Town.

The existing KWWA potable water system consists of an alluvial groundwater well with one well pump, chlorine injection system, a ground level water storage tank, booster pump station, and an elevated storage tank. The water system is shown schematically in Figure 1.

The water requirements for a possible major development south of Shasta Court were addressed in a 2018 Water and Sewer Capacity Report prepared by RG and Associates (2018 Report). The 2018 Report concluded that the existing water piping distribution system has sufficient water pressure to provide the maximum daily demands, plus fire flow. Although the possible major development is no longer planned to be served by KWWA, the study provided useful information regarding the existing water distribution capacity. The major development was named “Terra Cotta” and is referenced in the Colorado Ground Water Findings and Order, which determined the available groundwater quantities for the Town. The water rights associated with Terra Cotta are no longer available to KWWA and this report reflects the water rights which are still available to KWWA.

Because no changes to the existing water distribution system have been reported since the 2018 Report, the hydraulic model was not updated for this 2025 report. A future water system master plan should incorporate hydraulic modeling of the distribution system to address various fire flow scenarios to confirm if water system pressure under maximum day demand plus fire flow are sufficient, especially if future developments are near the Town limits and on dead-end lines near the west end of Town.

WWE performed a site visit to Kiowa to observe the existing water system facilities and interview staff. A possible site for a new groundwater well was identified and is addressed in this Report.



**Figure 1. Kiowa Water System Schematic**

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## **4.0 DESCRIPTION OF EXISTING WATER SYSTEM**

The existing alluvial well was drilled in 2006 (Well Permit No. 2794-F-R) to a total depth of 66 feet. The Final Permit for this well allows up to 132.5 acre-feet per year to be withdrawn from this well. There is no operable second well.

The well pump is a vertical turbine type with a pumping capacity of 395 gallons per minute (gpm) at a total dynamic head (TDH) of 78 feet. However, the Final Permit limits the instantaneous production from this well to 360 gpm. The pump motor is 10 horsepower. The pump is set in the well at a depth of approximately 64 feet.

Water from the well is chlorinated with liquid chlorine (at a concentration of 10 percent sodium hypochlorite). The chlorine dosage is about 1.2 mg/L. The chlorinated water is conveyed to an above ground bolted steel water storage tank with a volume of approximately 100,000 gallons. This water storage tank provides contact time for the chlorine disinfection (for virus inactivation) and acts as a wet well for the booster pumps.

Water is pumped from the 100,000 gallon storage tank by booster pumps (2 pumps), each with a rated capacity of 175 gpm at 387 feet (168 psi). A single building houses the well pump, booster pumps, and liquid chlorine system. The existing building is on the same parcel as the 100,000 gallon tank.

The booster pumps provide the flow and pressure to the distribution system and the elevated storage tank. The elevated water storage tank has a reported capacity of one million gallons (Inland Potable Services, 2017). The elevated water tank is located adjacent to Highway 86 approximately 1.4 miles to the southeast of Town. The tank is at approximately 146 feet high (at low water level). The elevation difference between the tank site and the Town is about 190 feet. Therefore, this is a total of 336 feet of water pressure (or 145 psi) coming into the Town. A pressure reducing valve station reduces this water pressure for potable water use within the Town.

### **4.1 Service Area**

The KWWA service area generally follows the Town of Kiowa boundaries with a few exceptions, such as the KWWA wastewater treatment facility that is just west of the Town Boundary but is within the service area. Also, KWWA is entering into an intergovernmental agreement with Elbert County for water service, including the KWWA providing bulk water sales up to 4,000,000 gallons (12.3 AF), and providing wastewater service for the Elbert County Public Works Facility at 11330 State Highway 86. The bulk water sales would include filling water trucks for municipal and fire protection purposes in Elbert County. The Public Works Facility is a new facility on the eastern edge of Town, and was relocated from a facility near Cheyenne Street and Arapahoe Street.

KWWA is in the process of upgrading water meters within the service area. As of October 2025, the service area includes 314 residential water meters, 32 commercial water meters, 15 governmental meters, 5 school meters 10 inactive meters, and 2 special rates for a total of 378

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accounts. Since commercial, government, and other meters may be larger than residential meters, the system is considered to have more single family equivalents than total accounts.

**4.2 Water Demands**

The water demands for the existing Town area and for future growth were estimated by WWE and are presented in this section. Water demands were calculated for both the existing population and future population based on a growth rate from the Colorado State Demography Office.

The water demands presented in this report were calculated based on the water that could potentially be used by a typical single family, or so called single family equivalent (SFE).

**4.3 Single Family Equivalents (SFEs) and Water Demand**

For determining the water demands to be used for planning of water systems, the water demand for a SFE is determined. This is accomplished by establishing the number of persons per household and estimating the water demand per person (or per capita).

For planning of single family residential occupancies, historic data are typically used. For Elbert County, the average persons per household are 2.77 ([www.census.gov](http://www.census.gov)). However, some Front Range communities are less than what is reported for Elbert County as shown in Table 1.

**Table 1: Household Population Densities in Some Front Range Colorado Municipalities  
(Ref: [www.census.gov](http://www.census.gov))**

Place	Persons Per Household
<b>Elbert County</b>	<b>2.77</b>
Castle Rock	2.76
Broomfield	2.57
Ft. Collins	2.47
Berthoud	2.36
Denver	2.30

In the 2018 Report the average number for persons per tap (or SFE) in the Town was 2.5. Herein, WWE also evaluates the assumption of 2.5 persons per household in the assessment for the water requirements for the existing and future development in the Town. WWE considers this to be a conservative assumption for calculating the indoor annual water use for the future development.

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**4.3.1 Residential Indoor Demands**

Data regarding historical water usage in the Town were provided to WWE and these data were used to estimate the daily per person indoor water use. The total metered water pumped from the groundwater well for 2019 was 33,711,000 gallons. This equals an average daily use of 93,400 gallons/day. This includes both indoor water use and irrigation water use. Updated data were provided in 2025 for this report update, which is reflected in Table 2, below.

The existing amount of indoor water use was estimated by using the metered water use during the non-irrigation months of January, February, March and April during 2019. This resulted in an average indoor use of 54,000 gallons/day. Updated data for this 2025 report update are included in the table below.

**Table 2: Annual Water Production and Calculated Averages**

Year	Total Production (gal) <sup>1</sup>	Total Production (Acre-Feet)	Average Day (GPD)	Indoor Average (GPD)
2019	33,711,000	103.5	93,400	54,000
2022	41,095,000	126.1	112,600	63,500
2023	30,298,000	93	83,000	56,000
2024	35,670,000	109.5	97,000	58,000

<sup>1</sup>Excludes known tank overflow events

In the 2018 Water and Sewer Capacity Report, the existing total SFEs were determined to be 431. A review of population trends from the Colorado State Demography office indicated the Town of Kiowa population declined slightly between 2018 and 2025, while the population in Elbert County increased. Therefore, WWE continued to use the 431 SFE value in 2025. The KWWA water system existing water demands were determined by WWE based on the 431 SFEs, as shown in Table 2. The calculated water demands per person are also presented in Table 3 based on the 2019 metered water use and assuming 2.5 people per SFE.

**Table 3. Kiowa Water System Use – 2019<sup>1</sup>**

	Indoor Water Use	Irrigation Water Use	Total Water Use per SFE (Average Day)
Single Family Equivalent	125 gpd/SFE	92 gpd/SFE	217 gpd/SFE
Per Person <sup>2</sup>	50 gpd/person	37 gpd/person	87 gpd/person

<sup>1</sup>Based on 431 SFE's existing

<sup>2</sup>Based on assuming 2.5 persons per SFE

The water system demand for the Town reflects the annual variation in demand based on various factors, such as changes in irrigation demand between wet and dry years, population variations, and variation in bulk water use with construction demand changes. In the overall water industry, a general overall decline in water use for each SFE has been reported. This can be attributed to the installation of individual water meters and the replacement of older meters with new, recently calibrated meters. In addition, actual indoor water use in single family residential homes is

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declining in general, especially in geographical areas that have limited water supplies and/or are prone to drought. The changes in water use must be recognized and are significant for water supply planning, rate and revenue projections, operations, water efficiency programs, etc. Several important references for indoor water use are addressed below to establish a basis for what should be planned for regarding indoor water use in Town and the new development area.

A 2016 Water Research Foundation study (DeOreo, et al., 2016) reported that the per capita average water use has decreased from 69 gallons per capita per day (gpcd) in 1999 to 59 gpcd in 2016. The improved water efficiency (15 percent decrease in per capita use) was attributed to water efficient clothes washers and toilets.

For the purposes of this report, WWE assumes an indoor water use of 60 gpcd as a planning number for future development. The information presented in this section demonstrates that the 60 gpcd figure is a conservative criterion especially considering that the average indoor use in the Town was 50 gpcd in 2019 and future development will be constructed with water efficient fixtures. In addition, the allowance that addresses line loss, represents an added margin of security whereby the 60 gpcd is appropriate as an indoor water usage planning criterion.

Using the household population density of 2.5 people, the indoor water demand for a SFE would be 150 gpd (2.5 people x 60 gpcd).

#### **4.3.2 Residential Irrigation Demands**

Residential lot sizes and areas vary in the existing Town residential development. For the existing development, the amount of water used for irrigation during 2019 in the Town was calculated at 92 gpd/SFE assuming 431 SFEs. This is a relatively low irrigation use, similar values were noted in more recent data.

For planning for each SFE, it is assumed that a lot will have a total of one-quarter acre. The average amount of lot area that is irrigated for a typical lot was assumed to be 25 percent (2,700 square feet).

An annual value of 30 inches of irrigation water demand was used for sprinkler lawn irrigation based on the assumption that Kentucky Bluegrass was the turf to be used. While there are other turf types that are more water efficient than Kentucky Bluegrass, it is common for water practitioners to assume Kentucky Bluegrass is planted in residential areas. The 30 inches of irrigation demand criterion is common in water resources planning in the Front Range region.

Therefore, averaged over the entire year there would be 140 gpd used for irrigation demand planning purposes for each SFE.

#### **4.3.3 Total Water Demand Per SFE – Used for Planning**

Water system planning for water demands must account for potential water use based on reasonable assumptions regarding home occupancy rates, dry year conditions, costs of water, etc.

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The total water demand for each SFE would include the indoor water demand and the irrigation water demand, as summarized in Table 4.

**Table 4. Summary of Water Demand for Each SFE – Used for Planning<sup>1</sup>**

	<b>Indoor Water Demand</b>	<b>Irrigation Water Demand</b>	<b>Total Water Demand per SFE (Average Day)</b>
Single Family Equivalent	150 gpd/SFE	140 gpd/SFE	290 gpd/SFE

<sup>1</sup>Water demand expressed as a daily use averaged over the entire year. This is average day demand.

In the 2018 Report, the existing total SFEs were determined to be 431. Therefore, for planning purposes, the average day water demand was set at 290 gpd/SFE. For comparison, the Town of Castle Rock uses 400 gpd per single family homes and duplexes and 260 gpd for townhomes for planning and design. Also, 290 gpd/SFE equates to 0.32 acre-feet per year, which is the planning value used by Denver Water and generally lower than other municipalities.

#### **4.4 Growth Projections**

The Town of Kiowa 2024 Comprehensive Plan presents a combination of single family residential and mixed-use land use in the larger undeveloped parcels in Town. The comprehensive plan also identified areas of possible growth, primarily east and west of the existing town boundaries. The Comprehensive Plan was prepared “to accommodate a range of possible conditions to allow for the market flexibility and unique nature of each future development project.” Due to this flexibility in the comprehensive plan, water demand growth projections in this report should be revisited when future development projects are defined.

An item to be considered with future planning is that the Town of Kiowa serves as the county seat for Elbert County and is home of the County Fairgrounds as well as three schools, an elementary school, a middle school, and a high school which serve residents in the surrounding unincorporated county as well as the Town.

A projection of ultimate buildout conditions was prepared for the Town in June 2024, based on discussion with the Town Administrator and Town Attorney. The projection was for a Town population of 2,513 people and 380 acre-feet per year water demand (Helton & Williamsen , 2024). A specific timeline for buildout was not included. Based on 2.5 people per SFE, this population would amount to a total of 1,005 SFE. The ultimate buildout condition assumed redevelopment of parcels within the Town boundary and major development on vacant land. This report focuses on a 20-year planning horizon based on published growth rate forecasts and does not address major development occurring in a short time frame. Therefore, the projected future water demand presented below will be less than the ultimate buildout demand.

For projecting future water demand below, WVE relied upon the State Demography Office Colorado Demographic Profile Community Profile for Elbert County, which forecast a growth rate of approximately 1.7-percent through 2035 and approximately 0.5-percent after.

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**4.5 Summary of Water Demands**

The estimated water demands for the existing Town and the future developments are expressed on an annual basis in Table 5 in terms of acre-feet per year. With the growth rate based on the State Demography Office projections, the 2024 buildout demand projection would not be realized in the next 20 years.

**Table 5. Estimated Annual Water Demands (Acre-Feet/Year)**

<b>2025<sup>1</sup></b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
140	152	166	170	174 <sup>2</sup>

<sup>1</sup>Based on 431 SFE's existing

<sup>2</sup>Equivalent to 0.32 acre-ft per year per SFE

The average daily demands are expressed as an average daily demand over the entire year. The maximum daily water demand is needed to size the water system facilities. The metered water flow rate records from the KWWA indicated a maximum day to average day ratio of 1.6 to 1.8 based on the 2022 to 2024 data. For water system planning, a maximum daily use to average daily use ratio can range between 2 and 3. For the purposes of this Report, WWE selected a maximum daily to average daily factor of 2.5 to account for increased bulk water sales to the County, discussed above.

The planning level average daily demands and maximum daily demands are presented in Table 6.

**Table 6. Estimated Average Daily and Maximum Daily Water Demands**

	<b>Average Day (GPD)</b>	<b>Maximum Day (GPD)</b>	<b>Maximum Day (GPM)</b>
2025	125,000	313,000	220
2030	136,000	340,000	240
2035	148,000	370,000	260
2040	152,000	380,000	265
2045	156,000	390,000	270

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## **5.0 GROUNDWATER SUPPLY & WELL PRODUCTION TO MEET DEMANDS**

The legal groundwater supply must be sufficient to meet the average annual water demands. The groundwater well pumps, booster pumps, and the chlorine disinfection system components all must be sized to accommodate the maximum day demand.

### **5.1 Annual Water Demand and Groundwater Supply**

From Table 5, the existing estimated annual water demand is about 140 acre-feet per year. Demand forecasts are also presented in increments of 5 years for possible future developments.

According to information made available to WWE, the KWWA has Kiowa Creek alluvial groundwater rights and Denver Basin bedrock aquifer water rights to meet the water demand. The existing alluvial groundwater well (Permit No. 2794-F-R) was identified as having an allocation of 575 acre-feet per year in the 2018 Water and Sewer Capacity Report. This was the case up until December 2017 when a Final Permit (Permit No. 2794-FP) was issued for this well from the Colorado Ground Water Commission. **This Final Permit limits the annual allocation from this well to 132.5 acre-feet per year.**

A second existing well located adjacent to the fire station on County Road 45 (Permit No. 2875-F-P) allows 15 acre-feet per year, with a limit of 30 gpm, to be produced from the Lower Dawson bedrock aquifer. It is our understanding that this well is no longer in use. The annual allocation in the existing well (132.5 acre-feet per year) is just short of the estimated *planning water demand* for existing development (140 acre-feet per year).

Based on *annual use records from 2022* (which show an annual use of 126 acre-feet), it is apparent that the existing Kiowa Creek alluvial groundwater well is capable of providing the annual water demand for the Town **but not for the planning level demands.**

Future studies should be undertaken to further explore opportunities for additional production from the Kiowa Creek alluvium even though such uses will require the prior approval of a replacement plan from the Colorado Ground Water Commission. Potential replacement sources might include effluent returning to the Kiowa Creek alluvium from the Town's wastewater treatment system.

The KWWA also has deep bedrock aquifer groundwater that can be used as both a primary and a redundant supply for the KWWA water system. The determination of the Denver Basin Aquifer KWWA water rights were summarized in an email from Matthew Poznanovic (Petrock Fendel Poznanovic) dated July 19, 2019, in a memorandum from Matthew Poznanovic (Hayes Poznanovic Korver) dated May 6, 2024 and a letter from Helton & Williamsen, P.C. dated June 11, 2024. The email and findings of the Colorado Ground Water Commission are included in Appendix A. A summary of the annual KWWA appropriations by Denver Basin aquifer based

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on the groundwater determination information (excluding the Terra Cotta portion) is presented in Table 7.

**Table 7. Summary of Groundwater Determination – Annual Appropriation<sup>1</sup>**

Aquifer	Total Appropriation Per Year (Acre-Feet/Year) <sup>1</sup>
Lower Dawson	68.3
Denver	163.8
Arapahoe	196.9
Laramie-Fox Hills	134.9

<sup>1</sup>The annual appropriation presented in this table are based on a 100-year aquifer life.

A new groundwater well drilled into one of the aquifers would result in KWWA use of the existing Denver Basin groundwater rights.

As shown in Table 6, the greatest annual appropriation is available from the Arapahoe Aquifer at 196.9 acre-feet per year. This appropriation could provide for the entire existing Town demand of 140 acre-feet per year (from Table 4) and provide for 100 percent redundancy (based on a full year) to the existing alluvial well under existing conditions.

For forecast future conditions, the estimated annual water demand is 174 acre-feet per year. The Arapahoe Aquifer could provide up to 196.9 acre-feet per year of this demand (based on full time production for an entire year), which would exceed the estimated annual demand. However, additional wells, operating with down time for allowed recovery, will be necessary to generate this full annual aquifer appropriation.

In addition, some planning agencies (e.g. Elbert County) require that new development show that there is sufficient water supply based on a 300-year aquifer life (compared to a 100-year aquifer life). This may be a requirement for future developments and should be investigated by the KWWA.

## **5.2 Maximum Day Demands and Groundwater Pumping Capacities**

From Table 5, the existing maximum day water demand is 220 gpm. The existing alluvial groundwater well pump has a capacity of 395 gpm but is limited in the Final Permit to 360 gpm. Therefore, the existing Kiowa Creek alluvial well and pump are adequate to provide the maximum day demand.

The estimated maximum day water demand with future development (based on growth forecasts for the next 20 years and not buildout conditions) is 270 gpm. Therefore, a new groundwater well is needed to meet the annual demand but not total maximum day demand under the assumed growth rate within the 20-year planning horizon. A new well is also needed to provide redundancy. If growth and development exceed the assumed growth rate, water demands and required infrastructure should be reviewed with the new information.

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WWE investigated the well yields of nearby wells in each of the deep aquifers to estimate the possible yield from a new Denver Basin aquifer well. A summary of this investigation is presented in Table 8.

**Table 8. Summary of Well Pumping Yields from Nearby Wells**

Aquifer	Reported Range (Gallons Per Minute)		
	High	Low	Average
Lower Dawson	150	17	53
Denver	432	18	72
Arapahoe	213	125	175
Laramie-Fox Hills	-	-	-

A well drilled into the Arapahoe Aquifer would likely provide the greatest production capacity, as shown as the highest average yield of the permitted wells investigated by WWE in Table 7.

However, the potential pumping yield of an Arapahoe Aquifer well (up to 213 gpm shown in Table 8) will not be sufficient to provide 100 percent redundancy to meet the estimated future maximum day water demands (270 gpm as shown in Table 6).

The existing unused Dawson well with a limit of 30 gpm would not meet maximum day water demands. In fact, at 30 gpm, the unused Dawson well would not meet the current measured actual average day water demand.

## **6.0 TOWN WATER SYSTEM NEEDED IMPROVEMENTS**

There are several needed improvements to the existing KWWA water system. The water system improvements are required to address:

- Redundancy of groundwater supply to have a backup in case of one well failure.
- System capacity to future development.

### **6.1 New Groundwater Well**

A new groundwater well is needed to provide some level of system redundancy and to provide adequate water supply during the maximum day demand conditions for the Town and the new development.

A new groundwater well drilled into the Arapahoe Aquifer would provide the KWWA with an additional water supply with an annual appropriation and pumping yield greater than anticipated from any of the other deep aquifers. In addition, the water quality of the Arapahoe Aquifer typically is more desirable than the water quality normally found in the Lower Dawson, Denver, and Laramie-Fox Hills aquifers.

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The raw water quality in a new Arapahoe Aquifer well will likely meet the primary drinking water standards. In some Arapahoe Aquifer wells, the secondary drinking water standards for iron (0.3 mg/L) and/or manganese (0.05 mg/L) can be exceeded. Iron and manganese can impart a taste to the water and can cause staining of plumbing fixtures (e.g., white porcelain sinks and toilets). Treatment processes can remove iron and/or manganese to more desirable levels, but can add to the costs of a water system. For the purposes of this report, WWE has prepared cost opinions with and without iron and manganese treatment for a new Arapahoe Aquifer well.

Once the new well is drilled, a full suite of water quality analyses will be required by the CDPHE. The results of the laboratory analyses will provide information regarding if any treatment processes will need to be designed and constructed.

The flow from each well must be metered by an approved and regularly calibrated water meter. The groundwater must be disinfected to comply with CDPHE regulations.

### **6.1.1 Location**

From a water rights standpoint, the new nontributary Arapahoe Aquifer groundwater well can be drilled at any location within the Town boundaries. The well site should be at least 250 feet by 250 feet to allow room for the drilling equipment and for future access to maintain the well pump and equipment. Sufficient electrical power to the site is required for the pump motor and appurtenances.

WWE proposes that the new well be drilled on the parcel that currently contains the existing alluvial well, booster pump station, and 100,000 gallon storage tank. Although small, this site is satisfactory given its proximity to the other system components including the booster pump station, chlorine injection system, storage tank, and easy access for construction and maintenance.

## **6.2 Existing Dawson Well at Fire Station**

An existing, permitted Dawson aquifer well is located adjacent to the fire station on County Road 45. Use of the well was discontinued when the alluvial well was constructed. This well is permitted to withdraw up to 15 acre-feet per year, at a maximum rate of 30 gpm, or 43,200 gpd. It was reported to have been connected directly to an elevated water storage tank at the site, which was demolished. The well was not reconnected to the water system due to the cost.

Reactivating the well would require a design review and approval from the CDPHE, including water quality sampling. The design would need to address disinfection and providing chlorine contact time, as well as possible treatment if water quality sampling detected parameters above allowable levels. Recent regulations would require sampling for per- and polyfluoroalkyl related chemicals and treatment for these chemicals, if detected. Since these contaminants are associated with fire fighting foams, as well as other sources, possible contamination due to the proximity to the fire station would need to be considered.

The Dawson aquifer in this area is classified as not-non-tributary, which means pumping from the well could impact surface water and would require more water rights administration than a

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non-tributary Arapahoe aquifer well. Given these factors and the fact that the allowable production rate is less than the winter average day demand, WWE recommends that this well be eliminated from further consideration.

### **6.3 Chlorine System and Building**

At a minimum, disinfection of the water from the new well will be required to provide a 4-log virus inactivation, to meet the CDPHE Regulation 11, Section 11.11.

A new liquid chlorine system is proposed for the new groundwater well. Groundwater disinfection will be achieved with liquid sodium hypochlorite (chlorine) for the inactivation of viruses and the appropriate chlorine contact time (CT) to achieve 4-log reduction of viruses. The CT will be provided in the existing above ground, bolted steel storage tank.

Achieving 4-log virus inactivation is a function of the source water chlorine demand, pH, temperature, residual chlorine concentration, flow, volume, and baffling factor provided by the contact chamber, in this case the existing steel 100,000 gallon storage tank. Subject to final design revisions, this tank is sufficient for the capacity required for the existing and new development.

A new building with a footprint of approximately 20 feet by 20 feet would be constructed on the existing site to house the chlorination equipment and the required flow metering system. If treatment of the Arapahoe Aquifer well water is required, a larger building with an approximate footprint of 35 feet by 20 feet would be needed.

### **6.4 Existing Booster Pump Station Storage Tank Rehabilitation**

The above ground storage tank functions to provide chlorine contact time for meeting disinfection requirements and also to provide a wet well for the booster pumps. It is an important component of the KWWA water system. As of April 2025, the tank was in need of maintenance, as shown in the photograph in Figure 2. Significant corrosion is apparent on the outside of the tank. The interior surfaces of the tank were not inspected. KWWA was in the process of having the tank recoated as of April 2025, so tank rehabilitation is not included in this report.

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**Figure 2. Tank Used for Disinfection Requirements. Note the Condition of Rust.**

## **6.5 Opinion of Probable Capital Costs**

The opinion of probable capital costs (herein referred to as estimated costs) for the groundwater well and improvements are presented in Appendix B. Estimated costs have been prepared to a nominal accuracy of +/- 30 percent of a total of \$4.27 million without iron and manganese treatment and \$5.96 million with iron and manganese treatment. The scope of each improvement has been quantified as much as possible within the limited conceptual level of planning to identify the required work and to provide preliminary planning estimated costs. For comparison, a ballpark estimate for connecting the existing unused Dawson Well was \$0.75 to \$1.5 million, with a nominal accuracy of +50 percent to -30 percent. It must be noted that with a permit limit of 30 gpm and 1,440 minutes is a day the unused Dawson well would produce 43,000 gpd, which is approximately one-third of the average day demand.

Project contingency is based on the level of confidence in the scope of work, quantities, and complexity of the project. Contingency is intended to cover anticipated variances between the direct costs in the base estimates and the final actual project cost for the total estimated values to represent the most likely outcomes. The contingency sum does not cover changes to the stated design (scope changes). It is expected that the most likely outcome is that all contingency monies would be spent in the execution of the project. Engineering fees for design have been estimated to cover services for permitting, CDPHE submittals, geotechnical, surveying, and final design. Engineering fees for construction administration have been estimated based on typical requirements for projects receiving grants and loans from the CDPHE.

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## **7.0 GRANTS AND LOANS CONSIDERATIONS**

The following summary was prepared in 2020 for funding options and has not been updated. Options for obtaining funding through the State Revolving Fund and Department of Local Affairs were pursued by KWWA but were placed on hold in spring 2025 when funding opportunities through the U.S. Congresswoman's Office became available. When the pursuit of grants and loans was placed on hold, a rate study, a capital asset study and a capital improvement plan were being prepared for KWWA by the Colorado Rural Water Association in support of the funding applications and had not been finalized. WWE has not seen a finalized copy of these studies as of December 2025.

### **7.1 State Revolving Fund (SRF) – Low Interest Loans**

The Water Pollution Control Revolving Fund (WPCRF) provides low interest loans to governmental entities for the construction of wastewater projects for public health and compliance purposes. The WPCRF can support the following types of projects:

- Treatment Facilities
- Water Storage
- Interceptor / Collection Lines
- Bio-Solid Facilities
- Stormwater Systems
- Re-Use Facilities
- Non-Point Source

In the past, the loan types that have been available include:

- Direct Loans: up to \$3 million, a recent APR of 2.0 percent for 20 or 30 years.
- Leveraged Loans: generally provided to investment grade borrowers with larger projects greater than \$3 million, bond market interest rate for 20 or 30 years.

The CDPHE, Department of Local Affairs (DOLA), and the Colorado Water Resources and Power Development Authority (Authority) jointly administer the SRF program. The WQCD administers the environmental reviews; engineering and design approval; and overall project management. The Authority manages the finances and loan approvals. DOLA staff works with applicants on credit reviews and reports.

There are several milestones that need to be met in order for a project to be eligible for the WPCRF:

- The entity must be included on the most current needs list.
- A Pre-qualification Application must be submitted to the Grants and Loans Unit.
- A Pre-application meeting with the CDPHE, DOLA, and the Authority must be held.
- Eligibility for a \$10,000 Planning Grant is determined at the Pre-application meeting

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- A Project Needs Assessment (PNA) and Environmental Determination for the project must be submitted to the CDPHE Water Quality Control Division, Engineering Section for review.
- CDPHE will provide an Environmental Determination (Categorical Exclusion or Environmental Assessment).
- If necessary, an Environmental Assessment would be submitted and reviewed. If a Finding of No Significant Impact (FNSI) is determined it would be published with a 30-day comment period.
- PNA and Environmental Approval must be obtained.
- Eligibility for a Design and Engineering Grant is determined after approval of the PNA.
- Prior to loan application, a public meeting must be held with a 30-day notice period, notifying the public of the project.
- The loan application would then be submitted.
- The Authority would then approve the loan.

## **7.2 Department of Local Affairs (DOLA) Energy and Mineral Impact Assistance Fund (EIAF)**

The purpose of the Energy and Mineral Impact Assistance Program is to assist political subdivisions that are socially and/or economically impacted by the development, processing, or energy conversion of minerals and mineral fuels. Funds come from the state severance tax on energy and mineral production and from a portion of the state's share of royalties paid to the federal government for mining and drilling of minerals and mineral fuels on federally owned land. Impact scores (10 being the most impact, 1 being the least impact) are assigned by county based on the extent of energy and mineral operations in the area. The success of this grant would be dependent on the competitiveness of the funding cycle and the county's energy and mineral impact score.

The kinds of projects that are funded include, but are not limited to, water and sewer improvements, road improvements, construction/improvements to recreation centers, senior centers and other public facilities, fire protection buildings and equipment, and local government planning. The EIAF grants are categorized into Administrative Grants, Tier I, Tier II, and Tier III.

Application deadlines for each category are on April 1st, August 1st, and December 1st of each year.

### **7.2.1 Administrative Grants**

Administrative Grants are available for planning, preliminary engineering and architectural design projects. The application process requires the local government to submit a detailed letter to the appropriate DOLA Regional Manager, and signed by the Chief Elected Official. The letter should include information such as the project description, budget, financial need, why the project is necessary, urgency of the project, how soon the project can begin, and how soon it can be

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completed. The maximum award for an Administrative Grant is \$25,000, and the total project cost should not exceed \$100,000. A dollar-for-dollar match is required for this grant.

**7.2.1.1 Tier I Grants**

Tier I grant funds can be used for a variety of public purposes including planning, engineering and design studies, and capital projects requiring a limited level of financial assistance. A Tier I grant awards up to \$200,000. Applications for grant consideration will be expected to include a minimum match of 25 percent. Larger matching amounts are generally more competitive.

Applications will be reviewed and recommended for funding by DOLA staff. The Executive Director makes funding decisions three times per year. A Tier 1 grant could be used to fund a portion of the design fees associated with a new facility.

**7.2.1.2 Tier II Grants**

The Tier II grant program is intended to support a wide variety of community development projects to improve quality of life in communities. A Tier II grant awards greater than \$200,000 up to \$2.0 million. Applications for grant consideration would be expected to include a minimum match of 25 percent. Larger matching amounts are generally more competitive. Applications would be reviewed and recommended for funding by DOLA staff. The Executive Director makes funding decisions three times per year.

**7.2.1.3 Tier III Grants**

To be competitive for a Tier III grant, applications require regional or multi-jurisdictional collaboration assistance to solve a multi-jurisdictional problem. A Tier III grant awards greater than \$2.0 million. Applications would be reviewed and recommended for funding by DOLA staff. The Executive Director makes funding decisions based on revenue availability. Local governments that receive a Tier III grant may be asked to withdraw from future funding application cycles.

**7.3 United States Department of Agriculture (USDA)**

The USDA Rural Development Program offers funding options to develop essential community facilities in rural areas. The KWWA system may qualify as an essential community facility as it provides an essential service to the local community in a primarily rural area and is not a private or commercial facility. To qualify for the Rural Development Program, the population of the City can be no more than 20,000 residents. In reviewing the grant application, the USDA RD office will prioritize communities based on population and median household income (MHI). In WWE's experience, it is only worthwhile applying for the grant if the Town qualifies as a small community with a population under 5,500 and a median household income below 80% of the state rural median household income. The 2018 MHI for Colorado rural communities was reported as \$52,841. The 2018 median household income for Elbert County was reported from the US Census as \$96,658.

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Based on this information, pursuing USDA funding may not be recommended for the KWWA. Information on this program is included below for completeness.

If the KWWA qualifies and chooses to apply for the grant, a Preliminary Engineering Report (PER) and an Environmental Report (ER) are required. The USDA PER is more extensive than the PNA which accompanies an SRF application. To complete these reports, the KWWA can apply for a SEARCH grant through the USDA RD office for \$30,000 which would cover the cost of engineering services for the PER and ER.

The amount awarded from the USDA grant varies between funding cycle. In the past, the USDA awards 20% of requested funding as a grant, and 80% as a 40-year loan with a comparatively low interest rate.

## **8.0 FUTURE WORK**

The following tasks are suggested to move forward with the plan for a new Arapahoe Aquifer well and rehabilitation of existing equipment.

- Investigate the available funding specifically for the KWWA for this project.
- Engage an engineering firm to provide surveying, geotechnical investigations, design drawings and specifications for the work.
- Apply for a well permit.

The final design of the new well and appurtenances must address factors and details that were beyond the scope of work for this Report. There may be additions (e.g., treatment processes) and refinements to the work presented herein that could impact decisions and costs.

## **9.0 REFERENCES**

Castle Rock, Town of. Water System Design 2018 Criteria Manual.

Colorado Department of Public Health and Environment. 2021 Drinking Water Revolving Fund – Intended Use Plan - Final. DWRF 2021 IUP\_Final.pdf - Google Drive.

Design Workshop. Elbert County Comprehensive Plan Update. April 1, 2018.

Grant II, P. Memorandum – Town of Kiowa’s Water and Sewer Main Totals. Nov. 8, 2020.

Helton & Williamsen, P.C. Letter – Future Water Needs Assessment, Water Portfolio – Town of Kiowa, Kiowa Water & Wastewater Authority. June 11, 2024.

Inland Potable Services, Inc. Inspection Report for Town of Kiowa, Kiowa, CO. – 1MG Steel Elevated Tank. April 18, 2017.

Kimley-Horn and Associates. Town of Kiowa 2024 Comprehensive Plan.

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Kiowa, Town of. “Home Page”. Town of Kiowa Website. <https://townofkiowa.colorado.gov/> Accessed in December 2025.

Kiowa, Town of. “Town Administration Page”. Town of Kiowa Website. <https://townofkiowa.colorado.gov/government>. Accessed in December 2025.

Poznanovic, M., Email to Debbie Ullom – Kiowa Determination 3723-BD. July 19, 2019.

Poznanovic, M., Memorandum to Ruth Borne, Esq. – Terra Cotta Investments LLC Groundwater. May 6, 2024. Privileged & Confidential Attorney Work Product

RG and Associates, LLC. Water and Sewer Capacity Report – Town of Kiowa. January 2018.

State Demography Office. Colorado Demographic Profile, Community Profile for Elbert County. Print Date: February 19, 2024.

United States Census Bureau. Population and Housing Unit Estimates. May 24, 2020. Accessed December 7, 2020.

United States Census Bureau. Households and Family. Retrieved December 09, 2020, from <https://data.census.gov/cedsci/table?tid=ACSST5Y2018.S1101>

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**APPENDIX A  
FINDINGS OF THE  
COLORADO GROUND  
WATER COMMISSION**

**From:** matt <matt@petrockfendel.com>  
**To:** Debbie Ullom <homerealtykiowa@aol.com>  
**Subject:** Kiowa Determination 3723-BD  
**Date:** Fri, Jul 19, 2019 11:22 am

**Attachments:** Kiowa Determination 3723-BD LFH.pdf (329K), Kiowa Determination 3723-BD LFH Ex A Part 1.pdf (117K), Kiowa Determination 3723-BD LFH Ex A Part 2.pdf (593K), Kiowa Determination 3723-BD LFH Ex A Part 3 Map.pdf (65K), Kiowa Determination 3723-BD LFH Ex B.pdf (293K), Kiowa Determination 3723-BD LFH Ex C.pdf (126K), Kiowa Determination 3723-BD LFH Ex E.pdf (464K), Kiowa Determination 3723-BD LFH Ex D.pdf (236K)

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Debbie, There are four approved determinations of water rights, Nos. 3723-BD, 3724-BD, 3725-BD and 3726-BD. Due to the number of the documents, I will email them in four sets. This is the first. Please let me know if you would like copies mailed to Kiowa as well.

Before I get to the summary of the determinations, I have 2 questions:

1. The determinations of water rights are issued to both Town of Kiowa and the Kiowa Water and Wastewater Authority. Did you want me to prepare a quit claim deed to convey the Town's interest in each determination to the Authority?
2. We are required to record each of the determinations of water rights. Did you want us to take care of recording, or did you want someone at Kiowa to handle this?

I am providing the following summary of the determinations of water right, but please be aware that additional details are contained in the determination approvals:

**For all of the determinations of water rights:**

The approved uses are municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation. The ground water may be reused and successively used to extinction. It is our opinion that municipal use will allow for storage of determination water in a reservoir, in storage tanks and in a pond located at a Kiowa park.

The approved places of use are limited to current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa.

Each new well can only be drilled into one aquifer. Wells have to be located at least 600 feet away from existing large capacity wells, unless an injury waiver is obtained.

An approved measuring device must be installed on each well.

For each determination of water right, the total quantified amount of water in each aquifer is divided between the 276 acre "Implied Consent" Lands, the 117 acre "Terra Cotta" Lands, the 54.743 "Fairground" Lands, and the 94 acre "Kiowa Heights" Lands.

In each aquifer, wells must be located on the total 541.743 acres of overlying land area. The Implied Consent Lands, Terra Cotta Lands and Fairgrounds Lands are all contiguous. Kiowa Heights is not contiguous with the other lands. Since all of the lands are not contiguous, there are some restrictions on how much water can be pumped by a well or group of wells, depending on the drilled location.

Wells located on the 447.743 acres of contiguous overlying land (Implied Consent, Terra Cotta and Fairgrounds) can only withdraw the amount of water in each aquifer underlying those lands and wells located on the 94 acres Kiowa Heights Land area can only withdraw the amount of water in each aquifer underlying that land, unless the following "cylinder of appropriation" condition is satisfied:

Cylinder of Appropriation Rule: For wells to withdraw water from noncontiguous parcels, Kiowa may withdraw the total amount from one or more wells, provided that the well or wells are located so that the cylinder or cylinders of appropriation for at least one of the wells overlap, at least in part, the noncontiguous parcels. In determining the cylinder of appropriation, the acreage from the noncontiguous parcels shall be included in the calculation. There is a mathematical equation that can be used to determine the radius of the cylinder. Once the radius of the cylinder is calculated, Kiowa can determine if there is a well location on the contiguous parcel where a well can be placed and have its cylinder overlap with the noncontiguous Kiowa Heights Land. It will be important to perform this calculation before Kiowa decides to drill a well.

There is an accounting requirement for each aquifer. Annual diversion records, including assignment of all water pumped from each well to each individual allocation, shall be collected and permanently maintained by the well owner and submitted to the Commission. As part of that requirement, all water pumped by any well must be assigned to an individual allocation, i.e. to the Implied Consent, the Terra Cotta, the Fairgrounds, or the Kiowa Heights, as it is withdrawn. What this means is that Kiowa must first account on its accounting form for water being withdrawn from the quantified amount available from one of the land areas, before accounting for any withdrawals of the quantified amounts available under another of the land areas.

### **3723-BD Laramie-Fox Hills Aquifer:**

-172.6 acre-feet per year is the average annual withdrawal.

-Water can be pumped from one or more wells of a well field in the same aquifer.

-Wells located on the 447.743 acres of contiguous overlying land (Implied Consent, Terra Cotta and Fairgrounds) can only withdraw a total of **144.4** acre-feet and Wells located on the 94 acres Kiowa Heights Land area can only withdraw a total of **28.2** acre-feet, unless the "cylinder of appropriation" condition described above is satisfied.

### **3724-BD Arapahoe Aquifer:**

-**247.6** acre-feet per year is the average annual withdrawal.

-Water can be pumped from one or more wells of a well field in the same aquifer.

-Wells located on the 447.743 acres of contiguous overlying land (Implied Consent, Terra Cotta and Fairgrounds) can only withdraw a total of **205.3** acre-feet and Wells located on the 94 acres Kiowa Heights Land area can only withdraw a total of **42.3** acre-feet, unless the “cylinder of appropriation” condition described above is satisfied.

### **3725-BD Denver Aquifer:**

-**208.5** acre-feet per year is the average annual withdrawal.

-Water can be pumped from one or more wells of a well field in the same aquifer.

-Wells located on the 447.743 acres of contiguous overlying land (Implied Consent, Terra Cotta and Fairgrounds) can only withdraw a total of **174.1** acre-feet and Wells located on the 94 acres Kiowa Heights Land area can only withdraw a total of **34.4** acre-feet, unless the “cylinder of appropriation” condition described above is satisfied.

### **3726-BD Lower Dawson Aquifer:**

-**71.96** acre-feet per year is the average annual withdrawal.

-The Lower Dawson Aquifer groundwater is not nontributary groundwater, which means a replacement plan must be obtained to replace the actual depletions to the alluvial aquifer and prevent material injury to existing water rights. The replacement plan must be obtained prior to approval of well permits for wells to be located on the Terra Cotta Overlying Land to withdraw the allocated ground water from the aquifer.

-Water can be pumped from one or more wells of a well field in the same aquifer.

-Wells located on the 447.743 acres of contiguous overlying land (Implied Consent, Terra Cotta and Fairgrounds) can only withdraw a total of **56.96** acre-feet and Wells located on the 94 acres Kiowa Heights Land area can only withdraw a total of **15** acre-feet, unless the “cylinder of appropriation” condition described above is satisfied.

Please let me know if you have any questions.

Matt

Matthew S. Poznanovic

Petrock Fendel Poznanovic, P.C.

700 17th Street, Suite 1800

**COLORADO GROUND WATER COMMISSION  
FINDINGS AND ORDER**

IN THE MATTER OF AN APPLICATION FOR DETERMINATION OF WATER RIGHT TO GROUND WATER IN THE KIOWA-BIJOU DESIGNATED GROUND WATER BASIN UNDERLYING NEW LAND; AND A CHANGE IN TYPE OF USE, CHANGE IN PLACE OF USE AND CHANGE IN POINT OF DIVERSION FOR THE WATER ALLOCATED IN DETERMINATION OF WATER RIGHT NOS. 60-BD, 2199-BD AND 2906-BD

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DETERMINATION NO.: 3726-BD

AQUIFER: Lower Dawson

APPLICANT: Town of Kiowa and Kiowa Water and Wastewater Authority

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In compliance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, 2 CCR 410-1, Town of Kiowa and Kiowa Water and Wastewater Authority (hereinafter "Applicant") submitted an application for determination of water right to designated ground water from the Lower Dawson Aquifer, and a request for a change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 60-BD, 2199-BD and 2906-BD.

**FINDINGS**

1. The application was received by the Colorado Ground Water Commission on June 7, 2018.
2. Applicant requests a determination of rights to designated ground water in the Lower Dawson Aquifer (hereinafter "Aquifer") underlying 276 acres, generally described as a portion of the S1/2 of Section 17, a portion of the SW1/4 of the SW1/4 of Section 16, a portion of the N1/2 of Section 20 and a portion of the NW1/4 of Section 21, all in Township 8 South, Range 63 West, 6th P.M., in Elbert County. According to a signed Nontributary Ground Water Consent Claim dated February 13, 2018 and February 14, 2018, attached hereto within Exhibit A, the Applicant claims the consent from the owners of the 276 acres of land to withdraw the ground water from the Aquifer underlying the land (such ground water hereinafter "Consent Underlying Ground Water"). The Applicant provided a copy of the ordinance regarding the appropriation of nontributary ground water that was introduced and passed by the Town of Kiowa on January 9, 1996, attached hereto within Exhibit A, as evidence that the Applicant has consent to withdraw the underlying ground water from the 276 acres of overlying land (such land hereinafter "Consent Overlying Land"), pursuant to Rule 5.3.10 of the Designated Basin Rules.
3. The Applicant intends to apply the Consent Underlying Ground Water to the following beneficial uses: municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation. The Applicant's proposed place of use of the Consent Underlying Ground Water is the current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa.
4. The quantity of water in the Aquifer underlying the 276 acres of Consent Overlying Land claimed by the applicant is 4,420 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
  - a. The average specific yield of the saturated permeable material of the Aquifer beneath the Consent Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 20 percent.

- b. The average thickness of the saturated permeable material of the Aquifer beneath the Consent Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 80 feet.
5. Pursuant to Section 37-90-107(7)(a), C.R.S., and in accordance with the Designated Basin Rules, the Commission shall allocate the underlying ground water based on ownership of the overlying land and an aquifer life of one hundred years. Should the entire quantity of underlying ground water underlying the Consent Overlying Land be available for allocation, the allowed average annual amount of withdrawal from the Aquifer that could be allocated from beneath the Consent Overlying Land would be 44.2 acre-feet per year.
6. A review of the records in the Office of the State Engineer has disclosed that a large-capacity well located on or in the vicinity of the Overlying Land has appropriations of water from the Aquifer created prior to November 19, 1973. The well permit number and other relevant data concerning such right is set forth in attached Exhibit B. Approval of the determination of water right would result in unreasonable impairment to these existing water rights unless terms and conditions are included to prevent such effect. In accordance with Rule 5.3.3.1 of the Designated Basin Rules, the quantity of Underlying Ground Water which is considered available for allocation has been reduced to 2,950 acre-feet, resulting in an allowed average annual amount of withdrawal of 29.5 acre-feet per year. This reduction was based on constructing a cylinder of appropriation around this existing well of sufficient size to provide volumes of water equal to one hundred times the annual appropriations of this right. The effect of this calculation is to reduce the land area available for calculating the quantity of available Underlying Ground Water to 184.4 acres. Except for the above described existing right, review of the records in the Office of the State Engineer finds no other previous allocations or permitted withdrawals from the Aquifer underlying the claimed land area.
7. Pursuant to Section 37-90-107(7)(c)(III), C.R.S., an approved determination of water right shall be considered a final determination of the amount of ground water so determined; except that the Commission shall retain jurisdiction for subsequent adjustment of such amount to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes.
8. In accordance with Rule 5.3.6 of the Designated Basin Rules, it has been determined that withdrawal of ground water from the Aquifer underlying the land claimed by the Applicant will, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Underlying Ground Water is considered to be not-nontributary ground water. Withdrawal of water from the Aquifer underlying the claimed land area would impact the alluvial aquifer(s) of Kiowa Creek or its tributaries, which has been determined to be over-appropriated. Commission approval of a replacement plan pursuant to Section 37-90-107.5, C.R.S., and Rule 5.6 of the Designated Basin Rules, providing for the actual depletion of the alluvial aquifer and adequate to prevent any material injury to existing water rights, is required prior to approval of well permits for wells to be located on this land area to withdraw the Consent Underlying Ground Water from the Aquifer.
9. Applicant requests a change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 60-BD, 2199-BD and 2906-BD. The allocation of ground water in determination of water right nos. 60-BD, 2199-BD and 2906-BD, for which the Applicant is seeking a change, is further described below:

- a. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated June 30, 2000, the Ground Water Commission (hereinafter "Commission") approved a Determination of Water Right, no. 60-BD, for the Lower Dawson Aquifer, summarized as follows.
  - i. The determination quantified an amount of water underlying 117 acres, generally described as land primarily located in the N1/2 of the SE1/4, located in part of the N1/2 of the S1/2 of the SE1/4, and in part of the S1/2 of the S1/2 of the NE1/4, of Section 20, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Terra Cotta property on attached Exhibit C and further described on attached Exhibit D ("Terra Cotta Overlying Land").
  - ii. The allowed average annual amount of ground water to be withdrawn was 18.7 acre-feet.
  - iii. The total volume of underlying ground water that was allocated was 1,870 acre-feet, based on a 100 year aquifer life.
  - iv. The use of the allocated ground water was limited to the following beneficial uses: residential use in single family homes and multi-family, commercial, and replacement water.
  - v. The place of use was the Terra Cotta Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Terra Cotta Overlying Land.
  - vii. Withdrawal of ground water from the Lower Dawson aquifer underlying the Terra Cotta Overlying Land will, within one hundred years, deplete the flow of a natural stream at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the ground water underlying the Terra Cotta Overlying Land is considered to be not-nontributary ground water. Withdrawal of water from the Lower Dawson aquifer underlying the Terra Cotta Overlying Land would impact the alluvial aquifer(s) of Kiowa Creek or its tributaries, which has been determined to be over-appropriated. Commission approval of a replacement plan providing for the actual depletion of the alluvial aquifer and adequate to prevent any material injury to existing water rights, is required prior to approval of well permits for wells to be located on the Terra Cotta Overlying Land to withdraw the allocated ground water from the aquifer.
  - viii. In a Findings and Order dated March 15, 2004 the type of use of the ground water was changed to: residential use in single family homes and multi-family, commercial, replacement water, stock watering, and irrigation.
- b. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 60-BD and provided a deed dated May 15, 2008 between Terra Cotta Investments, LLC and the Town of Kiowa as evidence of that ownership (hereinafter "Terra Cotta Underlying Ground Water").
- c. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated September 11, 2009, the Commission approved a Determination of Water Right, no. 2199-BD, for the Lower Dawson Aquifer, summarized as follows.

- i. The determination quantified an amount of water underlying 54.743 acres, generally described as part of the E1/2 of Section 17, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Fairgrounds property on attached Exhibit C and further described on attached Exhibit E ("Fairgrounds Overlying Land").
  - ii. The allowed average annual amount of ground water to be withdrawn was 8.76 acre-feet.
  - iii. The total volume of underlying ground water that was allocated was 876 acre-feet, based on a 100 year aquifer life.
  - iv. The use of the allocated ground water was limited to the following beneficial uses: domestic, industrial, commercial, irrigation, augmentation, stock watering, recreational water feature ponds and piscatorial habitat less than 1000 square feet, wildlife, and replacement.
  - v. The place of use was the Fairgrounds Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Fairgrounds Overlying Land.
  - vii. Withdrawal of ground water from the Lower Dawson aquifer underlying the Fairgrounds Overlying Land will, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the ground water underlying the Fairgrounds Overlying Land is considered to be non-tributary ground water. Withdrawal of water from the Lower Dawson aquifer underlying the Fairgrounds Overlying Land would impact the alluvial aquifer(s) of Bijou Creek or its tributaries, which has been determined to be over-appropriated. Commission approval of a replacement plan pursuant to Section 37-90-107.5, C.R.S., and Rule 5.6 of the Designated Basin Rules providing for the actual depletion of the alluvial aquifer and adequate to prevent any material injury to existing water rights, is required prior to approval of well permits for wells to be located on the Fairgrounds Overlying Land to withdraw the allocated ground water from the aquifer.
- d. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 2199-BD and provided a deed dated December 11, 1990 between the County of Elbert and the Town of Kiowa and a deed dated October 15, 2018 between Elbert County BOCC and the Towns of Kiowa as evidence of that ownership (hereinafter "Fairgrounds Underlying Ground Water").
  - e. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated September 7, 2012, the Commission approved a Determination of Water Right, no. 2906-BD, for the Lower Dawson Aquifer, summarized as follows.
    - i. The determination quantified an amount of water underlying 94 acres of land, generally described as part of the SE1/4 of the NE1/4 of Section 21 and part of the NW1/4 of Section 22, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Kiowa Heights property on attached Exhibit C and further described on attached Exhibit F ("Kiowa Heights Overlying Land").

- ii. The allowed average annual amount of ground water to be withdrawn was 15.0 acre-feet.
  - iii. The total volume of underlying ground water that was allocated was 1,500 acre-feet.
  - iv. The use of the allocated ground water was limited to the following beneficial uses: irrigation, domestic, commercial, livestock, replacement, fish and wildlife, pond and industrial.
  - v. The place of use was the Kiowa Heights Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Kiowa Heights Overlying Land.
  - vii. Withdrawal of ground water from the Lower Dawson aquifer underlying the Kiowa Heights Overlying Land will, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the ground water underlying the Kiowa Heights Overlying Land is considered to be non-tributary ground water. Withdrawal of water from the Lower Dawson aquifer underlying the Kiowa Heights Overlying Land would impact the alluvial aquifer(s) of Kiowa Creek or its tributaries, which has been determined to be over-appropriated. Commission approval of a replacement plan pursuant to Section 37-90-107.5, C.R.S., and Rule 5.6 of the Designated Basin Rules providing for the actual depletion of the alluvial aquifer and adequate to prevent any material injury to existing water rights, is required prior to approval of well permits for wells to be located on the Kiowa Heights Overlying Land to withdraw the allocated ground water from the aquifer.
- f. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 2906-BD and provided a deed dated May 24, 2018 between Kiowa Heights Development Co. LLC and the Town of Kiowa as evidence of that ownership (hereinafter "Kiowa Heights Underlying Ground Water").
10. The Applicant is seeking a change of type of use for the water allocated in determination of water right nos. 60-BD, 2199-BD and 2906-BD from the uses specified in those determinations, and described above, to municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation.
  11. The Applicant is seeking a change in place of use for the water allocated in determination of water right nos. 60-BD, 2199-BD and 2906-BD from the places of use specified in those determinations and described above to the current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa.
  12. The Applicant is seeking a change in point of diversion for the water allocated in determination of water right nos. 60-BD, 2199-BD and 2906-BD from the Overlying Land associated with each determination, as described above, to any location on the Consent Overlying Land, Terra Cotta Overlying Land, Fairgrounds Overlying Land and Kiowa Heights Overlying Land (hereinafter "Combined Overlying Land").

13. The Applicant is seeking approval to divert the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, and the Kiowa Heights Underlying Ground Water together from any well located on the Combined Overlying Land, in the manner of a well field.
14. The Applicant's request for changes to Determination of Water Right nos. 60-BD, 2199-BD, and 2906-BD essentially results in subsuming the existing allocations of Determination of Water Right nos. 60-BD, 2199-BD, and 2906-BD into a single new Determination of Water Right containing the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, and the Kiowa Heights Underlying Ground Water. The existing allocations of Determination of Water Right nos. 60-BD, 2199-BD, and 2906-BD may be subsumed into a single new Determination of Water right so long as, pursuant to section 37-90-107(7)(c)(III), C.R.S., the amounts of ground water allocated in those existing allocations are final amounts of ground water so determined from beneath their respective overlying lands; except that the Commission shall retain jurisdiction for subsequent adjustment of such amounts to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes. In order to ensure the amounts of water withdrawn from beneath each of the Consent Overlying Land, Terra Cotta Overlying Land, Fairgrounds Overlying Land, and Kiowa Heights Overlying Land areas do not exceed each individual allocation, all water diverted by any well on the Combined Overlying Land must be assigned to an individual allocation as it is withdrawn.
15. The Consent Overlying Land, Fairgrounds Overlying Land and Terra Cotta Overlying Land together total 447.743 acres and are contiguous to each other (hereinafter "Contiguous Overlying Land"). The Kiowa Heights Overlying Land contains 94 acres and is noncontiguous to the Contiguous Overlying Land, as shown on attached Exhibit C.
16. The Combined Overlying Land is located within the boundaries of the Kiowa-Bijou Designated Ground Water Basin. The Commission has jurisdiction over the ground water that is the subject of this Finding and Order.
17. The Commission Staff has evaluated the application relying on the claims to control of the Consent Underlying Ground Water, Terra Cotta Underlying Ground Water, Fairgrounds Underlying Ground Water and Kiowa Heights Underlying Ground Water (hereinafter "Underlying Ground Water") in the Aquifer made by the Applicant.
18. The ability of wells permitted to withdraw the authorized amount of water from this non-renewable Aquifer may be less than the one hundred years upon which the amount of water in the Aquifer is allocated, due to anticipated water level declines.
19. In accordance with Sections 37-90-107(7)(c)(II) and 37-90-112, C.R.S., the application was published in the Ranchland News newspaper on May 16, 2019 and May 23, 2019. No objections to the application were received within the time limit set by statute.

### ORDER

In accordance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, the Colorado Ground Water Commission orders that the application for determination of right to designated ground water in the Lower Dawson Aquifer underlying 276 acres of land, generally described as a portion of the S1/2 of Section 17, a portion of the SW1/4 of the SW1/4 of Section 16, a portion of the N1/2 of

Section 20 and a portion of the NW1/4 of Section 21, all in Township 8 South, Range 63 West, 6th P.M., further described in Exhibit A; and orders the request for the change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 60-BD, 2199-BD and 2906-BD, is approved subject to the following conditions:

20. The allowed average annual amount of withdrawal of Underlying Ground Water from the Aquifer shall not exceed 71.96 acre-feet, consisting of the following individual allowed average annual amounts of withdrawal:
  - a. Contiguous Overlying Land = 56.96 acre-feet, consisting of:
    - i. the 29.5 acre-feet determined herein to be available for allocation underlying the Consent Overlying Land Area,
    - ii. the 8.76 acre-feet previously allocated in Determination of Water Right no. 2199-BD for the Fairgrounds Overlying Land, and
    - iii. the 18.7 acre-feet previously allocated in Determination of Water Right no. 60-BD for the Terra Cotta Overlying Land.
  - b. Kiowa Overlying Land = the 15 acre-feet previously allocated in Determination of Water Right no. 2906-BD for the Kiowa Overlying Land.
21. The total volume of Underlying Ground Water that may be withdrawn from the Aquifer pursuant to this Determination of Water Right shall not exceed 7,196 acre-feet, consisting of the following individual volumes of Underlying Ground Water that may be withdrawn:
  - a. Contiguous Overlying Land = 5,696 acre-feet, consisting of:
    - i. the 2,950 acre-feet determined herein to be available for allocation underlying the Consent Overlying Land Area,
    - ii. the 876 acre-feet previously allocated in Determination of Water Right no. 2199-BD for the Fairgrounds Overlying Land, and
    - iii. the 1,870 acre-feet previously allocated in Determination of Water Right no. 60-BD for the Terra Cotta Overlying Land.
  - b. Kiowa Overlying Land = the 1,500 acre-feet previously allocated in Determination of Water Right no. 2906-BD for the Kiowa Overlying Land.
22. The Commission may adjust the total individual volumes and the individual allowed average annual amounts of withdrawal of Underlying Ground Water that may be withdrawn from the Aquifer to conform to actual Aquifer characteristics based on analysis of geophysical logs or other site-specific data if such analysis indicates that the initial estimates of the amounts of Underlying Ground Water in the Aquifer was incorrect.
23. The individual allowed maximum annual amounts of withdrawal may exceed the individual allowed average annual amounts of withdrawal as long as the total individual volumes of Underlying Ground Water withdrawn do not exceed the sum of the product of the number of years since the dates of approval of the each Determination of Water Right for each separate overlying land area (the date of this Determination for the Consent Overlying Land, June 30, 2000 for the Terra Cotta Overlying Land, September 11, 2009 for the Fairgrounds Overlying

Land, and September 7, 2012 for the Kiowa Heights Overlying Land) times the individual allowed average annual amounts of withdrawal allowed by each determination.

24. The Applicant may pump the allowed average annual amounts of withdrawal and the allowed maximum annual amounts of withdrawal from one or more wells of a well field in any combination, so long as the total combined withdrawal of the wells does not exceed the amounts described in this Order.
25. All water diverted by any well on the Combined Overlying Land must be assigned to an individual allocation, i.e. to the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, or the Kiowa Heights Underlying Ground Water, as it is withdrawn.
26. Commission approval of a replacement plan, providing for actual depletion of affected alluvial aquifers and adequate to prevent any material injury to existing water rights in such alluvial aquifers, is required prior to approval of well permits that allow the withdraw of the Underlying Ground Water.
27. The use of the allowed amounts of Underlying Ground Water from this allocation shall be limited to the following beneficial uses: municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation. The place of use shall be limited to current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa. Subject to the limitation in paragraph 26, the ground water that is the subject of this Determination may be reused and successively used to extinction to the extent dominion and control over the water is maintained and its volume can be distinguished from the volume of any stream system into which it is introduced to the satisfaction of the Commission.
28. Approval of this determination meets the requirements of Section 37-90-107(7)(d)(II) that requires a determination of ground water be made prior to the granting of a well permit pursuant to Section 37-90-107(7).
29. Wells withdrawing the allowed amounts of Underlying Ground Water allocated herein are subject to the following conditions:
  - a. The wells must be located on the above described 541.743 acres of Combined Overlying Land.
  - b. Wells located within the 447.743 acres of the Contiguous Overlying Land area shall only withdraw the average annual amounts of water determined for that area (totaling 56.96 acre-feet) and wells located within the 94 acres of the Kiowa Overlying Land area shall only withdraw the average annual amount of water determined for that area (15 acre-feet) unless the following condition is satisfied:
    - i. Any requests for combined withdrawal from noncontiguous areas must be identified in the well permit application and done in accordance with Rule 5.3.7.2 of the Designated Basins Rules.
  - c. No well shall be located within 600 feet of any existing large-capacity well in the same Aquifer unless a Waiver of Claim of Injury is obtained from the owner of the existing well or unless the Commission, after a hearing, finds that circumstances in a particular instance warrant that a well may be permitted without regard to this limitation.

- d. The wells must be constructed to withdraw water from only the Lower Dawson Aquifer.
  - e. The entire depth of each well must be geophysically logged prior to installing the casing as set forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
  - f. A totalizing flow meter or other Commission approved measuring device shall be installed on each well and maintained in good working order by the well owner. Annual diversion records, including assignment of all water pumped from each well to each individual allocation, shall be collected and permanently maintained by the well owner and submitted to the Commission.
  - g. The well shall be marked in a conspicuous place with this determination number, the well permit number, and the name of the Aquifer. The well owner shall take necessary means and precautions to preserve these markings.
30. Determination of Water Rights nos. 60-BD, 2199-BD and 2906-BD are hereby superseded by and subsumed into this determination and, from the date of this approval forward, the allocations in those previous determinations shall be used only in accordance with this approval in the absence of any subsequent approvals of the Commission modifying this Order.
31. A copy of this Findings and Order shall be recorded by the Applicant in the public records of the county in which the Combined Overlying Land is located so that a title examination of the above described 541.743 acres of the Combined Overlying Land area, or any part thereof, shall reveal the existence of this determination.
32. The ground water right determined herein is a vested property right with specific ownership. The ground water right may be transferred independent of the land under which the right originated. Any action taken that is intended to convey, transfer, and/or sell the subject water right shall explicitly identify this Determination of Water Right number, the specific aquifer, and the annual volume (based on a 100-year aquifer life) or total volume of ground water that is being conveyed.

Dated this 11th day of July, 2019.

By: *Kevin G. Rein*  
 Kevin G. Rein, P.E  
 Executive Director  
 Colorado Ground Water Commission

*Keith Vander Horst*  
 Keith Vander Horst, P.E.  
 Chief of Water Supply, Basins

Prepared by: jmw  
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**COLORADO GROUND WATER COMMISSION  
FINDINGS AND ORDER**

IN THE MATTER OF AN APPLICATION FOR DETERMINATION OF WATER RIGHT TO GROUND WATER IN THE KIOWA-BIJOU DESIGNATED GROUND WATER BASIN UNDERLYING NEW LAND; AND A CHANGE IN TYPE OF USE, CHANGE IN PLACE OF USE AND CHANGE IN POINT OF DIVERSION FOR THE WATER ALLOCATED IN DETERMINATION OF WATER RIGHT NOS. 59-BD, 2198-BD AND 2905-BD

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DETERMINATION NO.: 3725-BD

AQUIFER: Denver

APPLICANT: Town of Kiowa and Kiowa Water and Wastewater Authority

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In compliance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, 2 CCR 410-1, Town of Kiowa and Kiowa Water and Wastewater Authority (hereinafter "Applicant") submitted an application for determination of water right to designated ground water from the Denver Aquifer, and a request for a change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 59-BD, 2198-BD and 2905-BD.

**FINDINGS**

1. The application was received by the Colorado Ground Water Commission on June 7, 2018.
2. Applicant requests a determination of rights to designated ground water in the Denver Aquifer (hereinafter "Aquifer") underlying 276 acres, generally described as a portion of the S1/2 of Section 17, a portion of the SW1/4 of the SW1/4 of Section 16, a portion of the N1/2 of Section 20 and a portion of the NW1/4 of Section 21, all in Township 8 South, Range 63 West, 6th P.M., in Elbert County. According to a signed Nontributary Ground Water Consent Claim dated February 13, 2018 and February 14, 2018, attached hereto within Exhibit A, the Applicant claims the consent from the owners of the 276 acres of land to withdraw the ground water from the Aquifer underlying the land (such ground water hereinafter "Consent Underlying Ground Water"). The Applicant provided a copy of the ordinance regarding the appropriation of nontributary ground water that was introduced and passed by the Town of Kiowa on January 9, 1996, attached hereto within Exhibit A, as evidence that the Applicant has consent to withdraw the underlying ground water from the 276 acres of overlying land (such land hereinafter "Consent Overlying Land"), pursuant to Rule 5.3.10 of the Designated Basin Rules.
3. The Applicant intends to apply the Consent Underlying Ground Water to the following beneficial uses: municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation. The Applicant's proposed place of use of the Consent Underlying Ground Water is the current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa.
4. The quantity of water in the Aquifer underlying the 276 acres of Consent Overlying Land claimed by the applicant is 10,800 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
  - a. The average specific yield of the saturated permeable material of the Aquifer beneath the Consent Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 17 percent.

Aquifer: Denver

Applicant: Town of Kiowa and Kiowa Water and Wastewater Authority

- b. The average thickness of the saturated permeable material of the Aquifer beneath the Consent Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 230 feet.
5. Pursuant to Section 37-90-107(7)(a), C.R.S., and in accordance with the Designated Basin Rules, the Commission shall allocate the underlying ground water based on ownership of the overlying land and an aquifer life of one hundred years. Should the entire quantity of underlying ground water underlying the Consent Overlying Land be available for allocation, the allowed average annual amount of withdrawal from the Aquifer that could be allocated from beneath the Consent Overlying Land would be 108 acre-feet per year.
6. A review of the records in the Office of the State Engineer has disclosed that none of the Consent Underlying Ground Water in the Aquifer beneath the Consent Overlying Land has been previously allocated or permitted for withdrawal.
7. Pursuant to Section 37-90-107(7)(c)(III), C.R.S., an approved determination of water right shall be considered a final determination of the amount of ground water so determined; except that the Commission shall retain jurisdiction for subsequent adjustment of such amount to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes.
8. In accordance with Rule 5.3.6 of the Designated Basin Rules, it has been determined that withdrawal of ground water from the Aquifer underlying the Consent Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Consent Underlying Ground Water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. Pursuant to the Rules, no more than 98% of the amount of the Consent Underlying Ground Water withdrawn annually shall be consumed.
9. Applicant requests a change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 59-BD, 2198-BD and 2905-BD. The allocation of ground water in determination of water right nos. 59-BD, 2198-BD and 2905-BD, for which the Applicant is seeking a change, is further described below:
  - a. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated July 17, 2000, the Ground Water Commission (hereinafter "Commission") approved a Determination of Water Right, no. 59-BD, for the Denver Aquifer, summarized as follows.
    - i. The determination quantified an amount of water underlying 117 acres, generally described as land primarily located in the N1/2 of the SE1/4, located in part of the N1/2 of the S1/2 of the SE1/4, and in part of the S1/2 of the S1/2 of the NE1/4, of Section 20, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Terra Cotta property on attached Exhibit B and further described on attached Exhibit C ("Terra Cotta Overlying Land").
    - ii. In accordance with the Designated Basin Rules, the maximum annual amount available for appropriation for the Terra Cotta Overlying Land was reduced to allow for the annual withdrawal of a small capacity well which is completed in the aquifer, permit number 205219.

- iii. The allowed average annual amount of ground water to be withdrawn was 44.7 acre-feet.
  - iv. The total volume of underlying ground water that was allocated was 4,470 acre-feet, based on a 100 year aquifer life.
  - v. The use of the allocated ground water was limited to the following beneficial uses: residential use in single family homes and multi-family, commercial, and replacement water.
  - vi. The place of use was the Terra Cotta Overlying Land.
  - vii. Withdrawal of the allocated water was limited to wells located on the Terra Cotta Overlying Land.
  - viii. Withdrawal of ground water from the Denver aquifer underlying the Terra Cotta Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the underlying ground water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.
  - ix. In a Findings and Order dated March 15, 2004 the type of use of the ground water was changed to: residential use in single family homes and multi-family, commercial, replacement water, stock watering, and irrigation.
- b. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 59-BD and provided a deed dated May 15, 2008 between Terra Cotta Investments, LLC and the Town of Kiowa as evidence of that ownership (hereinafter "Terra Cotta Underlying Ground Water").
  - c. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated September 11, 2009, the Commission approved a Determination of Water Right, no. 2198-BD, for the Denver Aquifer, summarized as follows.
    - i. The determination quantified an amount of water underlying 54.743 acres, generally described as part of the E1/2 of Section 17, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Fairgrounds property on attached Exhibit B and further described on attached Exhibit D ("Fairgrounds Overlying Land").
    - ii. The allowed average annual amount of ground water to be withdrawn was 21.4 acre-feet.
    - iii. The total volume of underlying ground water that was allocated was 2,140 acre-feet, based on a 100 year aquifer life.
    - iv. The use of the allocated ground water was limited to the following beneficial uses: domestic, industrial, commercial, irrigation, augmentation, stock

- watering, recreational water feature ponds and piscatorial habitat less than 1000 square feet, wildlife, and replacement.
- v. The place of use was the Fairgrounds Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Fairgrounds Overlying Land.
  - vii. Withdrawal of ground water from the Denver aquifer underlying the Fairgrounds Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the underlying ground water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.
- d. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 2198-BD and provided a deed dated December 11, 1990 between the County of Elbert and the Town of Kiowa and a deed dated October 15, 2018 between Elbert County BOCC and the Towns of Kiowa as evidence of that ownership (hereinafter "Fairgrounds Underlying Ground Water").
- e. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated September 7, 2012, the Commission approved a Determination of Water Right, no. 2905-BD, for the Denver Aquifer, summarized as follows.
- i. The determination quantified an amount of water underlying 94 acres of land, generally described as part of the SE1/4 of the NE1/4 of Section 21 and part of the NW1/4 of Section 22, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Kiowa Heights property on attached Exhibit B and further described on attached Exhibit E ("Kiowa Heights Overlying Land").
  - ii. The allowed average annual amount of ground water to be withdrawn was 34.4 acre-feet.
  - iii. The total volume of underlying ground water that was allocated was 3,440 acre-feet.
  - iv. The use of the allocated ground water was limited to the following beneficial uses: irrigation, domestic, commercial, livestock, replacement, fish and wildlife, pond and industrial.
  - v. The place of use was the Kiowa Heights Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Kiowa Heights Overlying Land.
  - vii. Withdrawal of ground water from the Denver aquifer underlying the Kiowa Heights Overlying Land will not, within one hundred years, deplete the flow of

a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Underlying Ground Water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.

- f. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 2905-BD and provided a deed dated May 24, 2018 between Kiowa Heights Development Co. LLC and the Town of Kiowa as evidence of that ownership (hereinafter "Kiowa Heights Underlying Ground Water").
10. The Applicant is seeking a change of type of use for the water allocated in determination of water right nos. 59-BD, 2198-BD and 2905-BD from the uses specified in those determinations, and described above, to municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation.
11. The Applicant is seeking a change in place of use for the water allocated in determination of water right nos. 59-BD, 2198-BD and 2905-BD from the places of use specified in those determinations and described above to the current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa.
12. The Applicant is seeking a change in point of diversion for the water allocated in determination of water right nos. 59-BD, 2198-BD and 2905-BD from the Overlying Land associated with each determination, as described above, to any location on the Consent Overlying Land, Terra Cotta Overlying Land, Fairgrounds Overlying Land and Kiowa Heights Overlying Land (hereinafter "Combined Overlying Land").
13. The Applicant is seeking approval to divert the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, and the Kiowa Heights Underlying Ground Water together from any well located on the Combined Overlying Land, in the manner of a well field.
14. The Applicant's request for changes to Determination of Water Right nos. 59-BD, 2198-BD, and 2905-BD essentially results in subsuming the existing allocations of Determination of Water Right nos. 59-BD, 2198-BD, and 2905-BD into a single new Determination of Water Right containing the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, and the Kiowa Heights Underlying Ground Water. The existing allocations of Determination of Water Right nos. 59-BD, 2198-BD, and 2905-BD may be subsumed into a single new Determination of Water right so long as, pursuant to section 37-90-107(7)(c)(III), C.R.S., the amounts of ground water allocated in those existing allocations are final amounts of ground water so determined from beneath their respective overlying lands; except that the Commission shall retain jurisdiction for subsequent adjustment of such amounts to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes. In order to ensure the amounts of water withdrawn from beneath each of the Consent Overlying Land, Terra Cotta Overlying Land, Fairgrounds Overlying Land, and Kiowa Heights Overlying Land areas do not exceed each individual allocation, all water diverted by any well on the Combined Overlying Land must be assigned to an individual allocation as it is withdrawn.

15. The Consent Overlying Land, Fairgrounds Overlying Land and Terra Cotta Overlying Land together total 447.743 acres and are contiguous to each other (hereinafter "Contiguous Overlying Land"). The Kiowa Heights Overlying Land contains 94 acres and is noncontiguous to the Contiguous Overlying Land, as shown on attached Exhibit B.
16. The Combined Overlying Land is located within the boundaries of the Kiowa-Bijou Designated Ground Water Basin. The Commission has jurisdiction over the ground water that is the subject of this Finding and Order.
17. The Commission Staff has evaluated the application relying on the claims to control of the Consent Underlying Ground Water, Terra Cotta Underlying Ground Water, Fairgrounds Underlying Ground Water and Kiowa Heights Underlying Ground Water (hereinafter "Underlying Ground Water") in the Aquifer made by the Applicant.
18. The ability of wells permitted to withdraw the authorized amount of water from this non-renewable Aquifer may be less than the one hundred years upon which the amount of water in the Aquifer is allocated, due to anticipated water level declines.
19. In accordance with Sections 37-90-107(7)(c)(II) and 37-90-112, C.R.S., the application was published in the Ranchland News newspaper on May 16, 2019 and May 23, 2019. No objections to the application were received within the time limit set by statute.

#### ORDER

In accordance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, the Colorado Ground Water Commission orders that the application for determination of right to designated ground water in the Denver Aquifer underlying 276 acres of land, generally described as a portion of the S1/2 of Section 17, a portion of the SW1/4 of the SW1/4 of Section 16, a portion of the N1/2 of Section 20 and a portion of the NW1/4 of Section 21, all in Township 8 South, Range 63 West, 6th P.M., further described in Exhibit A; and orders the request for the change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 59-BD, 2198-BD and 2905-BD, is approved subject to the following conditions:

20. The allowed average annual amount of withdrawal of Underlying Ground Water from the Aquifer shall not exceed 208.5 acre-feet, consisting of the following individual allowed average annual amounts of withdrawal:
  - a. Contiguous Overlying Land = 174.1 acre-feet, consisting of:
    - i. the 108 acre-feet determined herein to be available for allocation underlying the Consent Overlying Land Area,
    - ii. the 21.4 acre-feet previously allocated in Determination of Water Right no. 2198-BD for the Fairgrounds Overlying Land, and
    - iii. the 44.7 acre-feet previously allocated in Determination of Water Right no. 59-BD for the Terra Cotta Overlying Land.
  - b. Kiowa Overlying Land = the 34.4 acre-feet previously allocated in Determination of Water Right no. 2905-BD for the Kiowa Overlying Land.

21. The total volume of Underlying Ground Water that may be withdrawn from the Aquifer pursuant to this Determination of Water Right shall not exceed 20,850 acre-feet, consisting of the following individual volumes of Underlying Ground Water that may be withdrawn:
  - a. Contiguous Overlying Land = 17,410 acre-feet, consisting of:
    - i. the 10,800 acre-feet determined herein to be available for allocation underlying the Consent Overlying Land Area,
    - ii. the 2,140 acre-feet previously allocated in Determination of Water Right no. 2198-BD for the Fairgrounds Overlying Land, and
    - iii. the 4,470 acre-feet previously allocated in Determination of Water Right no. 59-BD for the Terra Cotta Overlying Land.
  - b. Kiowa Overlying Land = the 3,440 acre-feet previously allocated in Determination of Water Right no. 2905-BD for the Kiowa Overlying Land.
22. The Commission may adjust the total individual volumes and the individual allowed average annual amounts of withdrawal of Underlying Ground Water that may be withdrawn from the Aquifer to conform to actual Aquifer characteristics based on analysis of geophysical logs or other site-specific data if such analysis indicates that the initial estimates of the amounts of Underlying Ground Water in the Aquifer was incorrect.
23. The individual allowed maximum annual amounts of withdrawal may exceed the individual allowed average annual amounts of withdrawal as long as the total individual volumes of Underlying Ground Water withdrawn do not exceed the sum of the product of the number of years since the dates of approval of the each Determination of Water Right for each separate overlying land area (the date of this Determination for the Consent Overlying Land, July 17, 2000 for the Terra Cotta Overlying Land, September 11, 2009 for the Fairgrounds Overlying Land, and September 7, 2012 for the Kiowa Heights Overlying Land) times the individual allowed average annual amounts of withdrawal allowed by each determination.
24. The Applicant may pump the allowed average annual amounts of withdrawal and the allowed maximum annual amounts of withdrawal from one or more wells of a well field in any combination, so long as the total combined withdrawal of the wells does not exceed the amounts described in this Order.
25. All water diverted by any well on the Combined Overlying Land must be assigned to an individual allocation, i.e. to the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, or the Kiowa Heights Underlying Ground Water, as it is withdrawn.
26. No more than 98% of the allowed amounts of Underlying Ground Water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the underlying ground water withdrawn is being consumed.
27. The use of the allowed amounts of Underlying Ground Water from this allocation shall be limited to the following beneficial uses: municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and

augmentation. The place of use shall be limited to current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa. Subject to the limitation in paragraph 26, the ground water that is the subject of this Determination may be reused and successively used to extinction to the extent dominion and control over the water is maintained and its volume can be distinguished from the volume of any stream system into which it is introduced to the satisfaction of the Commission.

28. Approval of this determination meets the requirements of Section 37-90-107(7)(d)(II) that requires a determination of ground water be made prior to the granting of a well permit pursuant to Section 37-90-107(7).
29. Wells withdrawing the allowed amounts of Underlying Ground Water allocated herein are subject to the following conditions:
  - a. The wells must be located on the above described 541.743 acres of Combined Overlying Land.
  - b. Wells located within the 447.743 acres of the Contiguous Overlying Land area shall only withdraw the average annual amounts of water determined for that area (totaling 174.1 acre-feet) and wells located within the 94 acres of the Kiowa Overlying Land area shall only withdraw the average annual amount of water determined for that area (34.4 acre-feet) unless the following condition is satisfied:
    - i. Any requests for combined withdrawal from noncontiguous areas must be identified in the well permit application and done in accordance with Rule 5.3.7.2 of the Designated Basins Rules.
  - c. No well shall be located within 600 feet of any existing large-capacity well in the same Aquifer unless a Waiver of Claim of Injury is obtained from the owner of the existing well or unless the Commission, after a hearing, finds that circumstances in a particular instance warrant that a well may be permitted without regard to this limitation.
  - d. The wells must be constructed to withdraw water from only the Denver Aquifer.
  - e. The entire depth of each well must be geophysically logged prior to installing the casing as set forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
  - f. A totalizing flow meter or other Commission approved measuring device shall be installed on each well and maintained in good working order by the well owner. Annual diversion records, including assignment of all water pumped from each well to each individual allocation, shall be collected and permanently maintained by the well owner and submitted to the Commission.
  - g. The well shall be marked in a conspicuous place with this determination number, the well permit number, and the name of the Aquifer. The well owner shall take necessary means and precautions to preserve these markings.
30. Determination of Water Rights nos. 59-BD, 2198-BD and 2905-BD are hereby superseded by and subsumed into this determination and, from the date of this approval forward, the allocations in those previous determinations shall be used only in accordance with this approval in the absence of any subsequent approvals of the Commission modifying this Order.

Aquifer: Denver

Applicant: Town of Kiowa and Kiowa Water and Wastewater Authority

31. A copy of this Findings and Order shall be recorded by the Applicant in the public records of the county in which the Combined Overlying Land is located so that a title examination of the above described 541.743 acres of the Combined Overlying Land area, or any part thereof, shall reveal the existence of this determination.
32. The ground water right determined herein is a vested property right with specific ownership. The ground water right may be transferred independent of the land under which the right originated. Any action taken that is intended to convey, transfer, and/or sell the subject water right shall explicitly identify this Determination of Water Right number, the specific aquifer, and the annual volume (based on a 100-year aquifer life) or total volume of ground water that is being conveyed.

Dated this 11th day of July, 2019.

By: *Kevin G. Rein*

Kevin G. Rein, P.E  
Executive Director  
Colorado Ground Water Commission

*Keith Vander Horst*

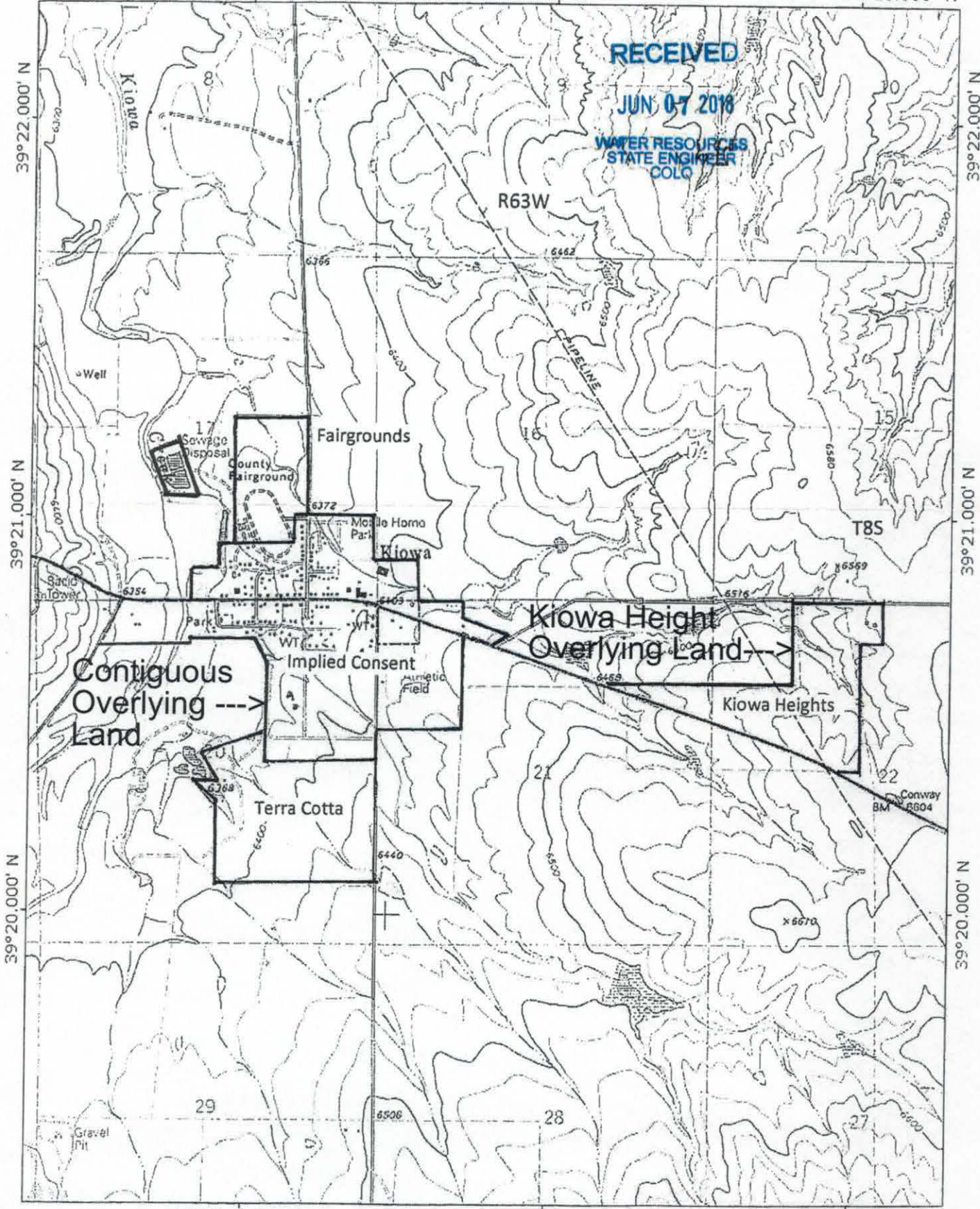
Keith Vander Horst, P.E.  
Chief of Water Supply, Basins

Prepared by: jmw  
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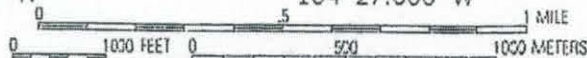
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WGS84 104°26.000' W



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**COLORADO GROUND WATER COMMISSION  
FINDINGS AND ORDER**

IN THE MATTER OF AN APPLICATION FOR DETERMINATION OF WATER RIGHT TO GROUND WATER IN THE KIOWA-BIJOU DESIGNATED GROUND WATER BASIN UNDERLYING NEW LAND; AND A CHANGE IN TYPE OF USE, CHANGE IN PLACE OF USE AND CHANGE IN POINT OF DIVERSION FOR THE WATER ALLOCATED IN DETERMINATION OF WATER RIGHT NOS. 58-BD, 2197-BD AND 2904-BD

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DETERMINATION NO.: 3724-BD

AQUIFER: Arapahoe

APPLICANT: Town of Kiowa and Kiowa Water and Wastewater Authority

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In compliance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, 2 CCR 410-1, Town of Kiowa and Kiowa Water and Wastewater Authority (hereinafter "Applicant") submitted an application for determination of water right to designated ground water from the Arapahoe Aquifer, and a request for a change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 58-BD, 2197-BD and 2904-BD.

**FINDINGS**

1. The application was received by the Colorado Ground Water Commission on June 7, 2018.
2. Applicant requests a determination of rights to designated ground water in the Arapahoe Aquifer (hereinafter "Aquifer") underlying 276 acres, generally described as a portion of the S1/2 of Section 17, a portion of the SW1/4 of the SW1/4 of Section 16, a portion of the N1/2 of Section 20 and a portion of the NW1/4 of Section 21, all in Township 8 South, Range 63 West, 6th P.M., in Elbert County. According to a signed Nontributary Ground Water Consent Claim dated February 13, 2018 and February 14, 2018, attached hereto within Exhibit A, the Applicant claims the consent from the owners of the 276 acres of land to withdraw the ground water from the Aquifer underlying the land (such ground water hereinafter "Consent Underlying Ground Water"). The Applicant provided a copy of the ordinance regarding the appropriation of nontributary ground water that was introduced and passed by the Town of Kiowa on January 9, 1996, attached hereto within Exhibit A, as evidence that the Applicant has consent to withdraw the underlying ground water from the 276 acres of overlying land (such land hereinafter "Consent Overlying Land"), pursuant to Rule 5.3.10 of the Designated Basin Rules.
3. The Applicant intends to apply the Consent Underlying Ground Water to the following beneficial uses: municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation. The Applicant's proposed place of use of the Consent Underlying Ground Water is the current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa.
4. The quantity of water in the Aquifer underlying the 276 acres of Consent Overlying Land claimed by the applicant is 12,900 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
  - a. The average specific yield of the saturated permeable material of the Aquifer beneath the Consent Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 17 percent.

Aquifer: Arapahoe

Applicant: Town of Kiowa and Kiowa Water and Wastewater Authority

- b. The average thickness of the saturated permeable material of the Aquifer beneath the Consent Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 275 feet.
5. Pursuant to Section 37-90-107(7)(a), C.R.S., and in accordance with the Designated Basin Rules, the Commission shall allocate the underlying ground water based on ownership of the overlying land and an aquifer life of one hundred years. Should the entire quantity of underlying ground water underlying the Consent Overlying Land be available for allocation, the allowed average annual amount of withdrawal from the Aquifer that could be allocated from beneath the Consent Overlying Land would be 129 acre-feet per year.
6. A review of the records in the Office of the State Engineer has disclosed that none of the Consent Underlying Ground Water in the Aquifer beneath the Consent Overlying Land has been previously allocated or permitted for withdrawal.
7. Pursuant to Section 37-90-107(7)(c)(III), C.R.S., an approved determination of water right shall be considered a final determination of the amount of ground water so determined; except that the Commission shall retain jurisdiction for subsequent adjustment of such amount to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes.
8. In accordance with Rule 5.3.6 of the Designated Basin Rules, it has been determined that withdrawal of ground water from the Aquifer underlying the Consent Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Consent Underlying Ground Water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. Pursuant to the Rules, no more than 98% of the amount of the Consent Underlying Ground Water withdrawn annually shall be consumed.
9. Applicant requests a change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 58-BD, 2197-BD and 2904-BD. The allocation of ground water in determination of water right nos. 58-BD, 2197-BD and 2904-BD, for which the Applicant is seeking a change, is further described below:
  - a. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated June 30, 2000, the Ground Water Commission (hereinafter "Commission") approved a Determination of Water Right, no. 58-BD, for the Arapahoe Aquifer, summarized as follows.
    - i. The determination quantified an amount of water underlying 117 acres, generally described as land primarily located in the N1/2 of the SE1/4, located in part of the N1/2 of the S1/2 of the SE1/4, and in part of the S1/2 of the S1/2 of the NE1/4, of Section 20, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Terra Cotta property on attached Exhibit B and further described on attached Exhibit C ("Terra Cotta Overlying Land").
    - ii. The allowed average annual amount of ground water to be withdrawn was 50.7 acre-feet.
    - iii. The total volume of underlying ground water that was allocated was 5,070 acre-feet, based on a 100 year aquifer life.

- iv. The use of the allocated ground water was limited to the following beneficial uses: residential use in single family homes and multi-family, commercial, and replacement water.
  - v. The place of use was the Terra Cotta Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Terra Cotta Overlying Land.
  - vii. Withdrawal of ground water from the Arapahoe aquifer underlying the Terra Cotta Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the underlying ground water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.
  - viii. In a Findings and Order dated March 15, 2004 the type of use of the ground water was changed to: residential use in single family homes and multi-family, commercial, replacement water, stock watering, and irrigation.
- b. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 58-BD and provided a deed dated May 15, 2008 between Terra Cotta Investments, LLC and the Town of Kiowa as evidence of that ownership (hereinafter "Terra Cotta Underlying Ground Water").
  - c. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated September 11, 2009, the Commission approved a Determination of Water Right, no. 2197-BD, for the Arapahoe Aquifer, summarized as follows.
    - i. The determination quantified an amount of water underlying 54.743 acres, generally described as part of the E1/2 of Section 17, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Fairgrounds property on attached Exhibit B and further described on attached Exhibit D ("Fairgrounds Overlying Land").
    - ii. The allowed average annual amount of ground water to be withdrawn was 25.6 acre-feet.
    - iii. The total volume of underlying ground water that was allocated was 2,560 acre-feet, based on a 100 year aquifer life.
    - iv. The use of the allocated ground water was limited to the following beneficial uses: domestic, industrial, commercial, irrigation, augmentation, stock watering, recreational water feature ponds and piscatorial habitat less than 1000 square feet, wildlife, and replacement.
    - v. The place of use was the Fairgrounds Overlying Land.

- vi. Withdrawal of the allocated water was limited to wells located on the Fairgrounds Overlying Land.
  - vii. Withdrawal of ground water from the Arapahoe aquifer underlying the Fairgrounds Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the underlying ground water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.
- d. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 2197-BD and provided a deed dated December 11, 1990 between the County of Elbert and the Town of Kiowa and a deed dated October 15, 2018 between Elbert County BOCC and the Towns of Kiowa as evidence of that ownership (hereinafter "Fairgrounds Underlying Ground Water").
- e. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated September 7, 2012, the Commission approved a Determination of Water Right, no. 2904-BD, for the Arapahoe Aquifer, summarized as follows.
- i. The determination quantified an amount of water underlying 94 acres of land, generally described as part of the SE1/4 of the NE1/4 of Section 21 and part of the NW1/4 of Section 22, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Kiowa Heights property on attached Exhibit B and further described on attached Exhibit E ("Kiowa Heights Overlying Land").
  - ii. The allowed average annual amount of ground water to be withdrawn was 42.3 acre-feet.
  - iii. The total volume of underlying ground water that was allocated was 4,230 acre-feet.
  - iv. The use of the allocated ground water was limited to the following beneficial uses: irrigation, domestic, commercial, livestock, replacement, fish and wildlife, pond and industrial.
  - v. The place of use was the Kiowa Heights Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Kiowa Heights Overlying Land.
  - vii. Withdrawal of ground water from the Arapahoe aquifer underlying the Kiowa Heights Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Underlying Ground Water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to

demonstrate periodically that no more than 98% of the water withdrawn is being consumed.

- f. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 2904-BD and provided a deed dated May 24, 2018 between Kiowa Heights Development Co. LLC and the Town of Kiowa as evidence of that ownership (hereinafter "Kiowa Heights Underlying Ground Water").
10. The Applicant is seeking a change of type of use for the water allocated in determination of water right nos. 58-BD, 2197-BD and 2904-BD from the uses specified in those determinations, and described above, to municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation.
  11. The Applicant is seeking a change in place of use for the water allocated in determination of water right nos. 58-BD, 2197-BD and 2904-BD from the places of use specified in those determinations, and described above, to the current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa.
  12. The Applicant is seeking a change in point of diversion for the water allocated in determination of water right nos. 58-BD, 2197-BD and 2904-BD from the Overlying Land associated with each determination, as described above, to any location on the Consent Overlying Land, Terra Cotta Overlying Land, Fairgrounds Overlying Land and Kiowa Heights Overlying Land (hereinafter "Combined Overlying Land").
  13. The Applicant is seeking approval to divert the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, and the Kiowa Heights Underlying Ground Water together from any well located on the Combined Overlying Land, in the manner of a well field.
  14. The Applicant's request for changes to Determination of Water Right nos. 58-BD, 2197-BD, and 2904-BD essentially results in subsuming the existing allocations of Determination of Water Right nos. 58-BD, 2197-BD, and 2904-BD into a single new Determination of Water Right containing the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, and the Kiowa Heights Underlying Ground Water. The existing allocations of Determination of Water Right nos. 58-BD, 2197-BD, and 2904-BD may be subsumed into a single new Determination of Water right so long as, pursuant to section 37-90-107(7)(c)(III), C.R.S., the amounts of ground water allocated in those existing allocations are final amounts of ground water so determined from beneath their respective overlying lands; except that the Commission shall retain jurisdiction for subsequent adjustment of such amounts to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes. In order to ensure the amounts of water withdrawn from beneath each of the Consent Overlying Land, Terra Cotta Overlying Land, Fairgrounds Overlying Land, and Kiowa Heights Overlying Land areas do not exceed each individual allocation, all water diverted by any well on the Combined Overlying Land must be assigned to an individual allocation as it is withdrawn.
  15. The Consent Overlying Land, Fairgrounds Overlying Land and Terra Cotta Overlying Land together total 447.743 acres and are contiguous to each other (hereinafter "Contiguous Overlying Land"). The Kiowa Heights Overlying Land contains 94 acres and is noncontiguous to the Contiguous Overlying Land, as shown on attached Exhibit B.

16. The Combined Overlying Land is located within the boundaries of the Kiowa-Bijou Designated Ground Water Basin. The Commission has jurisdiction over the ground water that is the subject of this Finding and Order.
17. The Commission Staff has evaluated the application relying on the claims to control of the Consent Underlying Ground Water, Terra Cotta Underlying Ground Water, Fairgrounds Underlying Ground Water and Kiowa Heights Underlying Ground Water (hereinafter "Underlying Ground Water") in the Aquifer made by the Applicant.
18. The ability of wells permitted to withdraw the authorized amount of water from this non-renewable Aquifer may be less than the one hundred years upon which the amount of water in the Aquifer is allocated, due to anticipated water level declines.
19. In accordance with Sections 37-90-107(7)(c)(II) and 37-90-112, C.R.S., the application was published in the Ranchland News newspaper on May 16, 2019 and May 23, 2019. No objections to the application were received within the time limit set by statute.

#### ORDER

In accordance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, the Colorado Ground Water Commission orders that the application for determination of right to designated ground water in the Arapahoe Aquifer underlying 276 acres of land, generally described as a portion of the S1/2 of Section 17, a portion of the SW1/4 of the SW1/4 of Section 16, a portion of the N1/2 of Section 20 and a portion of the NW1/4 of Section 21, all in Township 8 South, Range 63 West, 6th P.M., further described in Exhibit A; and orders the request for the change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 58-BD, 2197-BD and 2904-BD, is approved subject to the following conditions:

20. The allowed average annual amount of withdrawal of Underlying Ground Water from the Aquifer shall not exceed 247.6 acre-feet, consisting of the following individual allowed average annual amounts of withdrawal:
  - a. Contiguous Overlying Land = 205.3 acre-feet, consisting of:
    - i. the 129 acre-feet determined herein to be available for allocation underlying the Consent Overlying Land Area,
    - ii. the 25.6 acre-feet previously allocated in Determination of Water Right no. 2197-BD for the Fairgrounds Overlying Land, and
    - iii. the 50.7 acre-feet previously allocated in Determination of Water Right no. 58-BD for the Terra Cotta Overlying Land.
  - b. Kiowa Overlying Land = the 42.3 acre-feet previously allocated in Determination of Water Right no. 2904-BD for the Kiowa Overlying Land.
21. The total volume of Underlying Ground Water that may be withdrawn from the Aquifer pursuant to this Determination of Water Right shall not exceed 24,760 acre-feet, consisting of the following individual volumes of Underlying Ground Water that may be withdrawn:

- a. Contiguous Overlying Land = 20,530 acre-feet, consisting of:
    - i. the 12,900 acre-feet determined herein to be available for allocation underlying the Consent Overlying Land Area,
    - ii. the 2,560 acre-feet previously allocated in Determination of Water Right no. 2197-BD for the Fairgrounds Overlying Land, and
    - iii. the 5,070 acre-feet previously allocated in Determination of Water Right no. 58-BD for the Terra Cotta Overlying Land.
  - b. Kiowa Overlying Land = the 4,230 acre-feet previously allocated in Determination of Water Right no. 2904-BD for the Kiowa Overlying Land.
22. The Commission may adjust the total individual volumes and the individual allowed average annual amounts of withdrawal of Underlying Ground Water that may be withdrawn from the Aquifer to conform to actual Aquifer characteristics based on analysis of geophysical logs or other site-specific data if such analysis indicates that the initial estimates of the amounts of Underlying Ground Water in the Aquifer was incorrect.
  23. The individual allowed maximum annual amounts of withdrawal may exceed the individual allowed average annual amounts of withdrawal as long as the total individual volumes of Underlying Ground Water withdrawn do not exceed the sum of the product of the number of years since the dates of approval of the each Determination of Water Right for each separate overlying land area (the date of this Determination for the Consent Overlying Land, June 30, 2000 for the Terra Cotta Overlying Land, September 11, 2009 for the Fairgrounds Overlying Land, and September 7, 2012 for the Kiowa Heights Overlying Land) times the individual allowed average annual amounts of withdrawal allowed by each determination.
  24. The Applicant may pump the allowed average annual amounts of withdrawal and the allowed maximum annual amounts of withdrawal from one or more wells of a well field in any combination, so long as the total combined withdrawal of the wells does not exceed the amounts described in this Order.
  25. All water diverted by any well on the Combined Overlying Land must be assigned to an individual allocation, i.e. to the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, or the Kiowa Heights Underlying Ground Water, as it is withdrawn.
  26. No more than 98% of the allowed amounts of Underlying Ground Water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the underlying ground water withdrawn is being consumed.
  27. The use of the allowed amounts of Underlying Ground Water from this allocation shall be limited to the following beneficial uses: municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation. The place of use shall be limited to current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa. Subject to the limitation in paragraph 26, the ground water that is the subject of this Determination may be reused and successively used to extinction to the extent dominion and

control over the water is maintained and its volume can be distinguished from the volume of any stream system into which it is introduced to the satisfaction of the Commission.

28. Approval of this determination meets the requirements of Section 37-90-107(7)(d)(II) that requires a determination of ground water be made prior to the granting of a well permit pursuant to Section 37-90-107(7).
29. Wells withdrawing the allowed amounts of Underlying Ground Water allocated herein are subject to the following conditions:
  - a. The wells must be located on the above described 541.743 acres of Combined Overlying Land.
  - b. Wells located within the 447.743 acres of the Contiguous Overlying Land area shall only withdraw the average annual amounts of water determined for that area (totaling 205.3 acre-feet) and wells located within the 94 acres of the Kiowa Overlying Land area shall only withdraw the average annual amount of water determined for that area (42.3 acre-feet) unless the following condition is satisfied:
    - i. Any requests for combined withdrawal from noncontiguous areas must be identified in the well permit application and done in accordance with Rule 5.3.7.2 of the Designated Basins Rules.
  - c. No well shall be located within 600 feet of any existing large-capacity well in the same Aquifer unless a Waiver of Claim of Injury is obtained from the owner of the existing well or unless the Commission, after a hearing, finds that circumstances in a particular instance warrant that a well may be permitted without regard to this limitation.
  - d. The wells must be constructed to withdraw water from only the Arapahoe Aquifer.
  - e. The entire depth of each well must be geophysically logged prior to installing the casing as set forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
  - f. A totalizing flow meter or other Commission approved measuring device shall be installed on each well and maintained in good working order by the well owner. Annual diversion records, including assignment of all water pumped from each well to each individual allocation, shall be collected and permanently maintained by the well owner and submitted to the Commission.
  - g. The well shall be marked in a conspicuous place with this determination number, the well permit number, and the name of the Aquifer. The well owner shall take necessary means and precautions to preserve these markings.
30. Determination of Water Rights nos. 58-BD, 2197-BD and 2904-BD are hereby superseded by and subsumed into this determination and, from the date of this approval forward, the allocations in those previous determinations shall be used only in accordance with this approval in the absence of any subsequent approvals of the Commission modifying this Order.
31. A copy of this Findings and Order shall be recorded by the Applicant in the public records of the county in which the Combined Overlying Land is located so that a title examination of the

Aquifer: Arapahoe

Applicant: Town of Kiowa and Kiowa Water and Wastewater Authority

above described 541.743 acres of the Combined Overlying Land area, or any part thereof, shall reveal the existence of this determination.

32. The ground water right determined herein is a vested property right with specific ownership. The ground water right may be transferred independent of the land under which the right originated. Any action taken that is intended to convey, transfer, and/or sell the subject water right shall explicitly identify this Determination of Water Right number, the specific aquifer, and the annual volume (based on a 100-year aquifer life) or total volume of ground water that is being conveyed.

Dated this 11th day of July, 2019.

By: *Kevin G. Rein*  
Kevin G. Rein, P.E.  
Executive Director  
Colorado Ground Water Commission

*Keith Vander Horst*  
Keith Vander Horst, P.E.  
Chief of Water Supply, Basins

Prepared by: jmw  
F&O3724-BD.doc

**COLORADO GROUND WATER COMMISSION  
FINDINGS AND ORDER**

IN THE MATTER OF AN APPLICATION FOR DETERMINATION OF WATER RIGHT TO GROUND WATER IN THE KIOWA-BIJOU DESIGNATED GROUND WATER BASIN UNDERLYING NEW LAND; AND A CHANGE IN TYPE OF USE, CHANGE IN PLACE OF USE AND CHANGE IN POINT OF DIVERSION FOR THE WATER ALLOCATED IN DETERMINATION OF WATER RIGHT NOS. 57-BD, 2196-BD AND 2903-BD

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DETERMINATION NO.: 3723-BD

AQUIFER: Laramie-Fox Hills

APPLICANT: Town of Kiowa and Kiowa Water and Wastewater Authority

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In compliance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, 2 CCR 410-1, Town of Kiowa and Kiowa Water and Wastewater Authority (hereinafter "Applicant") submitted an application for determination of water right to designated ground water from the Laramie-Fox Hills Aquifer, and a request for a change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 57-BD, 2196-BD and 2903-BD.

**FINDINGS**

1. The application was received by the Colorado Ground Water Commission on June 7, 2018.
2. Applicant requests a determination of rights to designated ground water in the Laramie-Fox Hills Aquifer (hereinafter "Aquifer") underlying 276 acres, generally described as a portion of the S1/2 of Section 17, a portion of the SW1/4 of the SW1/4 of Section 16, a portion of the N1/2 of Section 20 and a portion of the NW1/4 of Section 21, all in Township 8 South, Range 63 West, 6th P.M., in Elbert County. According to a signed Nontributary Ground Water Consent Claim dated February 13, 2018 and February 14, 2018, attached hereto within Exhibit A, the Applicant claims the consent from the owners of the 276 acres of land to withdraw the ground water from the Aquifer underlying the land (such ground water hereinafter "Consent Underlying Ground Water"). The Applicant provided a copy of the ordinance regarding the appropriation of nontributary ground water that was introduced and passed by the Town of Kiowa on January 9, 1996, attached hereto within Exhibit A, as evidence that the Applicant has consent to withdraw the underlying ground water from the 276 acres of overlying land (such land hereinafter "Consent Overlying Land"), pursuant to Rule 5.3.10 of the Designated Basin Rules.
3. The Applicant intends to apply the Consent Underlying Ground Water to the following beneficial uses: municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation. The Applicant's proposed place of use of the Consent Underlying Ground Water is the current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa.
4. The quantity of water in the Aquifer underlying the 276 acres of Consent Overlying Land claimed by the applicant is 8,900 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
  - a. The average specific yield of the saturated permeable material of the Aquifer beneath the Consent Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 15 percent.

- b. The average thickness of the saturated permeable material of the Aquifer beneath the Consent Overlying Land that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 215 feet.
5. Pursuant to Section 37-90-107(7)(a), C.R.S., and in accordance with the Designated Basin Rules, the Commission shall allocate the underlying ground water based on ownership of the overlying land and an aquifer life of one hundred years. Should the entire quantity of underlying ground water underlying the Consent Overlying Land be available for allocation, the allowed average annual amount of withdrawal from the Aquifer that could be allocated from beneath the Consent Overlying Land would be 89.0 acre-feet per year.
6. A review of the records in the Office of the State Engineer has disclosed that none of the Consent Underlying Ground Water in the Aquifer beneath the Consent Overlying Land has been previously allocated or permitted for withdrawal.
7. Pursuant to Section 37-90-107(7)(c)(III), C.R.S., an approved determination of water right shall be considered a final determination of the amount of ground water so determined; except that the Commission shall retain jurisdiction for subsequent adjustment of such amount to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes.
8. In accordance with Rule 5.3.6 of the Designated Basin Rules, it has been determined that withdrawal of ground water from the Aquifer underlying the Consent Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Consent Underlying Ground Water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. Pursuant to the Rules, no more than 98% of the amount of the Consent Underlying Ground Water withdrawn annually shall be consumed.
9. Applicant requests a change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 57-BD, 2196-BD and 2903-BD. The allocation of ground water in determination of water right nos. 57-BD, 2196-BD and 2903-BD, for which the Applicant is seeking a change, is further described below:
  - a. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated June 30, 2000, the Ground Water Commission (hereinafter "Commission") approved a Determination of Water Right, no. 57-BD, for the Laramie-Fox Hills Aquifer, summarized as follows.
    - i. The determination quantified an amount of water underlying 117 acres, generally described as land primarily located in the N1/2 of the SE1/4, located in part of the N1/2 of the S1/2 of the SE1/4, and in part of the S1/2 of the S1/2 of the NE1/4, of Section 20, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Terra Cotta property on attached Exhibit B and further described on attached Exhibit C ("Terra Cotta Overlying Land").
    - ii. The allowed average annual amount of ground water to be withdrawn was 37.7 acre-feet.
    - iii. The total volume of underlying ground water that was allocated was 3,770 acre-feet, based on a 100 year aquifer life.

- iv. The use of the allocated ground water was limited to the following beneficial uses: residential use in single family homes and multi-family, commercial, and replacement water.
  - v. The place of use was the Terra Cotta Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Terra Cotta Overlying Land.
  - vii. Withdrawal of ground water from the Laramie-Fox Hills aquifer underlying the Terra Cotta Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the underlying ground water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.
- b. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 57-BD and provided a deed dated May 15, 2008 between Terra Cotta Investments, LLC and the Town of Kiowa as evidence of that ownership (hereinafter "Terra Cotta Underlying Ground Water").
- c. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated September 11, 2009, the Commission approved a Determination of Water Right, no. 2196-BD, for the Laramie-Fox Hills Aquifer, summarized as follows.
- i. The determination quantified an amount of water underlying 54.743 acres, generally described as part of the E1/2 of Section 17, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Fairgrounds property on attached Exhibit B and further described on attached Exhibit D ("Fairgrounds Overlying Land").
  - ii. The allowed average annual amount of ground water to be withdrawn was 17.7 acre-feet.
  - iii. The total volume of underlying ground water that was allocated was 1,770 acre-feet, based on a 100 year aquifer life.
  - iv. The use of the allocated ground water was limited to the following beneficial uses: domestic, industrial, commercial, irrigation, augmentation, stock watering, recreational water feature ponds and piscatorial habitat less than 1000 square feet, wildlife, and replacement.
  - v. The place of use was the Fairgrounds Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Fairgrounds Overlying Land.
  - vii. Withdrawal of ground water from the Laramie-Fox Hills aquifer underlying the Fairgrounds Overlying Land will not, within one hundred years, deplete the flow

of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the underlying ground water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.

- d. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 2196-BD and provided a deed dated December 11, 1990 between the County of Elbert and the Town of Kiowa and a deed dated October 15, 2018 between Elbert County BOCC and the Towns of Kiowa as evidence of that ownership (hereinafter "Fairgrounds Underlying Ground Water").
- e. Pursuant to Section 37-90-107(7), CRS, in a Findings and Order dated September 7, 2012, the Commission approved a Determination of Water Right, no. 2903-BD, for the Laramie-Fox Hills Aquifer, summarized as follows.
  - i. The determination quantified an amount of water underlying 94 acres of land, generally described as part of the SE1/4 of the NE1/4 of Section 21 and part of the NW1/4 of Section 22, Township 8 South, Range 63 West of the 6<sup>th</sup> P.M., shown as the Kiowa Heights property on attached Exhibit B and further described on attached Exhibit E ("Kiowa Heights Overlying Land").
  - ii. The allowed average annual amount of ground water to be withdrawn was 28.2 acre-feet.
  - iii. The total volume of underlying ground water that was allocated was 2,820 acre-feet.
  - iv. The use of the allocated ground water was limited to the following beneficial uses: irrigation, domestic, commercial, livestock, replacement, fish and wildlife, pond and industrial.
  - v. The place of use was the Kiowa Heights Overlying Land.
  - vi. Withdrawal of the allocated water was limited to wells located on the Kiowa Heights Overlying Land.
  - vii. Withdrawal of ground water from the Laramie-Fox Hills aquifer underlying the Kiowa Heights Overlying Land will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and, therefore, the Underlying Ground Water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules. No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.
- f. The Applicant claims ownership of the ground water allocated in Determination of Water Right no. 2903-BD and provided a deed dated May 24, 2018 between Kiowa

Heights Development Co. LLC and the Town of Kiowa as evidence of that ownership (hereinafter "Kiowa Heights Underlying Ground Water").

10. The Applicant is seeking a change of type of use for the water allocated in determination of water right nos. 57-BD, 2196-BD and 2903-BD from the uses specified in those determinations, and described above, to municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation.
11. The Applicant is seeking a change in place of use for the water allocated in determination of water right nos. 57-BD, 2196-BD and 2903-BD from the places of use specified in those determinations and described above to the current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa.
12. The Applicant is seeking a change in point of diversion for the water allocated in determination of water right nos. 57-BD, 2196-BD and 2903-BD from the Overlying Land associated with each determination, as described above, to any location on the Consent Overlying Land, Terra Cotta Overlying Land, Fairgrounds Overlying Land and Kiowa Heights Overlying Land (hereinafter "Combined Overlying Land").
13. The Applicant is seeking approval to divert the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, and the Kiowa Heights Underlying Ground Water together from any well located on the Combined Overlying Land, in the manner of a well field.
14. The Applicant's request for changes to Determination of Water Right nos. 57-BD, 2196-BD, and 2903-BD essentially results in subsuming the existing allocations of Determination of Water Right nos. 57-BD, 2196-BD, and 2903-BD into a single new Determination of Water Right containing the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, and the Kiowa Heights Underlying Ground Water. The existing allocations of Determination of Water Right nos. 57-BD, 2196-BD, and 2903-BD may be subsumed into a single new Determination of Water right so long as, pursuant to section 37-90-107(7)(c)(III), C.R.S., the amounts of ground water allocated in those existing allocations are final amounts of ground water so determined from beneath their respective overlying lands; except that the Commission shall retain jurisdiction for subsequent adjustment of such amounts to conform to the actual local aquifer characteristics from adequate information obtained from well drilling or test holes. In order to ensure the amounts of water withdrawn from beneath each of the Consent Overlying Land, Terra Cotta Overlying Land, Fairgrounds Overlying Land, and Kiowa Heights Overlying Land areas do not exceed each individual allocation, all water diverted by any well on the Combined Overlying Land must be assigned to an individual allocation as it is withdrawn.
15. The Consent Overlying Land, Fairgrounds Overlying Land and Terra Cotta Overlying Land together total 447.743 acres and are contiguous to each other (hereinafter "Contiguous Overlying Land"). The Kiowa Heights Overlying Land contains 94 acres and is noncontiguous to the Contiguous Overlying Land, as shown on attached Exhibit B.
16. The Combined Overlying Land is located within the boundaries of the Kiowa-Bijou Designated Ground Water Basin. The Commission has jurisdiction over the ground water that is the subject of this Finding and Order.

17. The Commission Staff has evaluated the application relying on the claims to control of the Consent Underlying Ground Water, Terra Cotta Underlying Ground Water, Fairgrounds Underlying Ground Water and Kiowa Heights Underlying Ground Water (hereinafter "Underlying Ground Water") in the Aquifer made by the Applicant.
18. The ability of wells permitted to withdraw the authorized amount of water from this non-renewable Aquifer may be less than the one hundred years upon which the amount of water in the Aquifer is allocated, due to anticipated water level declines.
19. In accordance with Sections 37-90-107(7)(c)(II) and 37-90-112, C.R.S., the application was published in the Ranchland News newspaper on May 16, 2019 and May 23, 2019. No objections to the application were received within the time limit set by statute.

### ORDER

In accordance with Section 37-90-107(7), C.R.S., and the Designated Basin Rules, the Colorado Ground Water Commission orders that the application for determination of right to designated ground water in the Laramie-Fox Hills Aquifer underlying 276 acres of land, generally described as a portion of the S1/2 of Section 17, a portion of the SW1/4 of the SW1/4 of Section 16, a portion of the N1/2 of Section 20 and a portion of the NW1/4 of Section 21, all in Township 8 South, Range 63 West, 6th P.M., further described in Exhibit A; and orders the request for the change in type of use, change in place of use and change in point of diversion for the water allocated in determination of water right nos. 57-BD, 2196-BD and 2903-BD, is approved subject to the following conditions:

20. The allowed average annual amount of withdrawal of Underlying Ground Water from the Aquifer shall not exceed 172.6 acre-feet, consisting of the following individual allowed average annual amounts of withdrawal:
  - a. Contiguous Overlying Land = 144.4 acre-feet, consisting of:
    - i. the 89 acre-feet determined herein to be available for allocation underlying the Consent Overlying Land Area,
    - ii. the 17.7 acre-feet previously allocated in Determination of Water Right no. 2196-BD for the Fairgrounds Overlying Land, and
    - iii. the 37.7 acre-feet previously allocated in Determination of Water Right no. 57-BD for the Terra Cotta Overlying Land.
  - b. Kiowa Overlying Land = the 28.2 acre-feet previously allocated in Determination of Water Right no. 2903-BD for the Kiowa Overlying Land.
21. The total volume of Underlying Ground Water that may be withdrawn from the Aquifer pursuant to this Determination of Water Right shall not exceed 17,260 acre-feet, consisting of the following individual volumes of Underlying Ground Water that may be withdrawn:
  - a. Contiguous Overlying Land = 14,440 acre-feet, consisting of:
    - i. the 8,900 acre-feet determined herein to be available for allocation underlying the Consent Overlying Land Area,


- ii. the 1,770 acre-feet previously allocated in Determination of Water Right no. 2196-BD for the Fairgrounds Overlying Land, and
    - iii. the 3,770 acre-feet previously allocated in Determination of Water Right no. 57-BD for the Terra Cotta Overlying Land.
  - b. Kiowa Overlying Land = the 2,820 acre-feet previously allocated in Determination of Water Right no. 2903-BD for the Kiowa Overlying Land.
- 22. The Commission may adjust the total individual volumes and the individual allowed average annual amounts of withdrawal of Underlying Ground Water that may be withdrawn from the Aquifer to conform to actual Aquifer characteristics based on analysis of geophysical logs or other site-specific data if such analysis indicates that the initial estimates of the amounts of Underlying Ground Water in the Aquifer was incorrect.
- 23. The individual allowed maximum annual amounts of withdrawal may exceed the individual allowed average annual amounts of withdrawal as long as the total individual volumes of Underlying Ground Water withdrawn do not exceed the sum of the product of the number of years since the dates of approval of the each Determination of Water Right for each separate overlying land area (the date of this Determination for the Consent Overlying Land, June 30, 2000 for the Terra Cotta Overlying Land, September 11, 2009 for the Fairgrounds Overlying Land, and September 7, 2012 for the Kiowa Heights Overlying Land) times the individual allowed average annual amounts of withdrawal allowed by each determination.
- 24. The Applicant may pump the allowed average annual amounts of withdrawal and the allowed maximum annual amounts of withdrawal from one or more wells of a well field in any combination, so long as the total combined withdrawal of the wells does not exceed the amounts described in this Order.
- 25. All water diverted by any well on the Combined Overlying Land must be assigned to an individual allocation, i.e. to the Consent Underlying Ground Water, the Terra Cotta Underlying Ground Water, the Fairgrounds Underlying Ground Water, or the Kiowa Heights Underlying Ground Water, as it is withdrawn.
- 26. No more than 98% of the allowed amounts of Underlying Ground Water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the underlying ground water withdrawn is being consumed.
- 27. The use of the allowed amounts of Underlying Ground Water from this allocation shall be limited to the following beneficial uses: municipal (including but not limited to domestic, commercial, industrial, irrigation, stockwatering, and recreational), and replacement and augmentation. The place of use shall be limited to current municipal service area and future municipal service area for the Kiowa Water and Wastewater Authority, including the Town of Kiowa. Subject to the limitation in paragraph 26, the ground water that is the subject of this Determination may be reused and successively used to extinction to the extent dominion and control over the water is maintained and its volume can be distinguished from the volume of any stream system into which it is introduced to the satisfaction of the Commission.

28. Approval of this determination meets the requirements of Section 37-90-107(7)(d)(II) that requires a determination of ground water be made prior to the granting of a well permit pursuant to Section 37-90-107(7).
29. Wells withdrawing the allowed amounts of Underlying Ground Water allocated herein are subject to the following conditions:
  - a. The wells must be located on the above described 541.743 acres of Combined Overlying Land.
  - b. Wells located within the 447.743 acres of the Contiguous Overlying Land area shall only withdraw the average annual amounts of water determined for that area (totaling 144.4 acre-feet) and wells located within the 94 acres of the Kiowa Overlying Land area shall only withdraw the average annual amount of water determined for that area (28.2 acre-feet) unless the following condition is satisfied:
    - i. Any requests for combined withdrawal from noncontiguous areas must be identified in the well permit application and done in accordance with Rule 5.3.7.2 of the Designated Basins Rules.
  - c. No well shall be located within 600 feet of any existing large-capacity well in the same Aquifer unless a Waiver of Claim of Injury is obtained from the owner of the existing well or unless the Commission, after a hearing, finds that circumstances in a particular instance warrant that a well may be permitted without regard to this limitation.
  - d. The wells must be constructed to withdraw water from only the Laramie-Fox Hills Aquifer.
  - e. The entire depth of each well must be geophysically logged prior to installing the casing as set forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
  - f. A totalizing flow meter or other Commission approved measuring device shall be installed on each well and maintained in good working order by the well owner. Annual diversion records, including assignment of all water pumped from each well to each individual allocation, shall be collected and permanently maintained by the well owner and submitted to the Commission.
  - g. The well shall be marked in a conspicuous place with this determination number, the well permit number, and the name of the Aquifer. The well owner shall take necessary means and precautions to preserve these markings.
30. Determination of Water Rights nos. 57-BD, 2196-BD and 2903-BD are hereby superseded by and subsumed into this determination and, from the date of this approval forward, the allocations in those previous determinations shall be used only in accordance with this approval in the absence of any subsequent approvals of the Commission modifying this Order.
31. A copy of this Findings and Order shall be recorded by the Applicant in the public records of the county in which the Combined Overlying Land is located so that a title examination of the above described 541.743 acres of the Combined Overlying Land area, or any part thereof, shall reveal the existence of this determination.

32. The ground water right determined herein is a vested property right with specific ownership. The ground water right may be transferred independent of the land under which the right originated. Any action taken that is intended to convey, transfer, and/or sell the subject water right shall explicitly identify this Determination of Water Right number, the specific aquifer, and the annual volume (based on a 100-year aquifer life) or total volume of ground water that is being conveyed.

Dated this 11th day of July, 2019.

By:   
Kevin G. Rein, P.E.  
Executive Director  
Colorado Ground Water Commission

  
Keith Vander Horst, P.E.  
Chief of Water Supply, Basins

Prepared by: jmw  
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**APPENDIX B  
OPINIONS OF  
PROBABLE CAPITAL  
COSTS**

# Wright Water Engineers, Inc.



Client:	KIOWA WATER AND WASTEWATER AUTHORITY
Project:	POTABLE WATER SYSTEM

**DRAFT**  
**OPINION OF PROBABLE**  
**CAPITAL COSTS**  
 (+/- 30 Percent)  
**Groundwater Well & Water System**  
**Improvements**

Project No: 201-087.000	
Sheet 1 of 1	
By: JMN	Ckd: WFL
Date: 12/5/25	Date: 12/5/25
Rev:	Date:

DESCRIPTION	COMMENTS/REFERENCES	QTY.	UNIT MEAS.	UNIT COST			TOTAL	TOTAL COST
				MATER.	LABOR	EQUIP.		
Well Development	Drill, Construct, and Test 1 Well 12" casing Arapahoe top @ 1200 feet deep	1,700	LF				\$960	\$1,630,000
Sound Barrier	rental during well drilling	1	EA				\$160,000	\$160,000
Well Equipment	Pump, Motors, Controls	1	LS				\$270,000	\$270,000
New Well & Chlorination Building	Previous Project	400	SF				\$430	\$172,000
Liquid Chlorine System	Previous Project	1	LS				\$35,000	\$35,000
Valves and Metering	Previous Project	1	LS				\$43,000	\$43,000
Site Piping & Connection Into Existing Piping to Storage Tank		1	LS				\$85,000	\$85,000
Site Work and Fencing		1	LS				\$20,000	\$20,000
Backup Power Generator & Automatic Transfer Switch		1	LS				\$270,000	\$270,000
GESC		1	LS				\$25,000	\$25,000
Subtotal								\$2,710,000
Contingency (20%)								\$542,000
Subtotal								\$3,252,000
Environmental Assessment w/ Cultural and Archelological Survey		1	LS				\$44,000	\$44,000
Engineering Design Phase (15%)								\$490,000
Office Engineer Construction Phase (5%)								\$163,000
Engineer Resident Project Representative	Assume funding requires nearly fulltim construction observation for 26 weeks	1,100	Hourly				\$156	\$172,000
Funding Requirement Compliance (3%)	American Iron and Steel, Davis Bacon Wages and compliance paperwork							\$98,000
Electrical Power Hookup	Guestimate from prior projects							\$50,000
<b>TOTAL</b>								<b>\$4,270,000</b>

Notes:

1. Assumes existing power service requires size increase for new well equipment.
2. Assumes rate of inflation increase does not continue at historic levels.
3. Excludes administrative and legal fees.

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DESCRIPTION	COMMENTS/REFERENCES	QTY.	UNIT MEAS.	UNIT COST				TOTAL COST
				MATER.	LABOR	EQUIP.	TOTAL	
Well Development	Drill, Construct, and Test 1 Well 12" casing Arapahoe top @ 1200 feet deep	1,700	LF				\$960	\$1,600,000
Greensand filters and gear	200 gpm	1	EA				\$1,000,000	\$1,000,000
Sound Barrier	rental during well drilling	1	EA				\$160,000	\$160,000
Well Equipment	Pump, Motors, Controls	1	LS				\$270,000	\$270,000
New Well & Chlorination Building	Previous Project	840	SF				\$430	\$361,200
Liquid Chlorine System	Previous Project	1	LS				\$35,000	\$35,000
Valves and Metering	Previous Project	1	LS				\$43,000	\$43,000
Site Piping & Connection Into Existing Piping to Storage Tank		1	LS				\$85,000	\$85,000
Site Work and Fencing		1	LS				\$25,000	\$25,000
Backup Power Generator & Automatic Transfer Switch		1	LS				\$270,000	\$270,000
GESC		1	LS				\$25,000	\$25,000
Subtotal								\$3,874,000
Contingency (20%)								\$800,000
Subtotal								\$4,670,000
Engineering Design Phase (15%)								\$700,000
Office Engineer Construction Phase (5%)								\$230,000
Engineer Resident Project Representative	Assume funding requires nearly fulltime construction observation for 26 weeks	1,100	Hourly				\$156	\$170,000
Funding Requirement Compliance (3%)	American Iron and Steel, Davis Bacon Wages and compliance paperwork							\$140,000
Electrical Power Hookup	Guestimate from prior projects							\$50,000
<b>TOTAL</b>								\$5,960,000

**Notes:**

1. Assumes existing power service requires size increase for new well equipment.
2. Assumes rate of inflation increase does not continue at historic levels.
3. Excludes administrative and legal fees.

Wright Water Engineers, Inc.