
REQUEST FOR QUALIFICATIONS



RFQ No. 001-2023
Lake Meredith Desalination

SUBMITTAL DEADLINE: June 7, 2023 at 5:00 P.M. (CT)

A. PROJECT INFORMATION

1. Objective

The Canadian River Municipal Water Authority (“Authority”) supplies water to 11 Member Cities totalling over half-million people. The sources are from surface water (Lake Meredith) and groundwater (John C. Williams Wellfield). The chloride concentrations have continued to rise in Lake Meredith, reducing its usefulness as a water supply. The surface and groundwater are currently blended to comply with the state’s secondary drinking water standard of 300ppm chloride. The Authority is planning to investigate the feasibility of utilizing reverse osmosis to reduce chlorides in order to maximize the use of the surface water supply and take advantage of existing infrastructure. See Appendix A for historical water quality data for both supplies.

The Authority wishes to obtain professional services to evaluate the cost and feasibility of a reverse osmosis project to reduce the chloride level in the Authority’s water supply. This will be a negotiated procurement, with any award being made to the submitter with the proposal determined by the Authority as being most responsive to the Authority’s needs; and is subject to the standards of Texas Government Code chapter 2254.

2. Scope of Work

The Authority envisions this study will be conducted in at least two (2) phases. With the assistance of the selected consultant, the Authority plans to determine the order of priority of the scope items identified below, in addition to identifying other potential scope items. The Authority has identified the following scope items that will need to be evaluated to determine the feasibility of reverse osmosis:

Phase 1. The goal of the initial part of this study is to obtain a high-level overview of the costs associated with reverse osmosis (“RO”). At the conclusion of this phase the Authority, with input from consultant, will determine the elements of additional phases and their priorities, if the Authority elects to proceed.

Preliminary Project Costs

Preliminary estimate of costs of an RO project, including but not limited to:

- RO facility for lake, groundwater and/or combined treatment
- Operating and Maintenance Cost
- Disposal options including injection well(s)

Additional Phase(s). If the Phase 1 efforts produce results that demonstrate an RO project could be feasible, the Authority would then work with the consultant to identify and determine the priority of further scope items that would provide the most value to the Authority. The Authority will likely be interested in prioritizing the scope items that could assist the most with refining the preliminary cost estimates. At any point during this study, the Authority may determine to terminate the study for any reason, including but not limited to: construction and/or O&M cost estimates exceeding what the Authority

determines to be affordable, other indicators of infeasibility, or at the discretion of the Authority. Below is a list of potential scope items for additional phase(s):

- Further evaluation of disposal options for brine/reject water including more detailed costs, life expectancy and permitting strategy.
- Evaluate alternate sources of water to drought proof an RO facility in the event of extreme drought. This may be in the form of a collection well in the lake/river alluvium, brackish groundwater, or other.
- Evaluate RO facility location options.
- Perform safe yield study/analysis on Lake Meredith.
- Evaluate corrosivity impacts of the RO water to infrastructure and potential solutions.
- Evaluate additional staffing requirements associated with RO.
- Evaluate impact zebra mussels could have on the treatment processes.
- Evaluate seismic risks associated with deep well injection sites.
- Title XVI Feasibility Report may be requested at the end of the study to assist the Authority in obtaining grant funding for implementation.
- Depending on the findings of this study, the Authority may elect to pursue additional services from the the selected consultant including, but not limited to, design services.

Note: In consultation with the selected consultant, the Authority may require that a separate (more specialized) consultant be added to the consulting team. Examples include geologists, hydrogeologists, etc. to assist with injection well(s), brackish groundwater, and seismic risks. In this scenario the Authority would work with the selected consultant, and have the final say, in the RFQ/SOQ process and which consultant was added to the team.

3. Other Information

The Authority has submitted a grant funding application to the Bureau of Reclamation for financial assistance to conduct this study. The grant being sought is the WaterSMART: Water Recycling and Desalination Planning which is Notice of Funding Opportunity No.:R23AS00076. If the Authority is awarded this grant, the selected consultants will be expected to comply with any requirements related to this grant funding.

B. SELECTION AND AWARD PROCESS

The Authority will review, evaluate, and rank the responses according the criteria listed below. The Authority may select two or more firms to be interviewed, based on demonstrated competence and qualifications to perform the services.

Respondents not providing a response to each of the elements listed below may be considered non-responsive and ineligible for consideration.

1. Qualifications & Experience of the Firm and Personnel

- a. Organizational chart of project leadership team and staff.
- b. Indicate each team member's name, title, license (if applicable), and years of experience, education, and other relevant information, including experience in conducting similar work.
- c. Working knowledge and experience of reverse osmosis, regional groundwater, and surface water.
- d. Include a brief description of up to five similar or related projects that staff members have performed that includes:
 - 1) Project scope and performance (including equipment and technologies employed)
 - 2) Location
 - 3) Client liaison name and phone number
 - 4) Other pertinent information

Note: The Authority requests that SOQs contain information relevant to prime consultant only. Please see note in Section A.2.

Professional services will be procured in accordance with subchapter A of chapter 2254 of the Texas Government Code, the Professional Services Procurement Act. Ranking of responders will be made on the basis of demonstrated competence and qualifications to provide the requested services as determined by the Authority based on information provided in response to the RFQ and in any interviews the Authority may hold or other information the Authority may request. The Authority will negotiate with the highest-ranking responder to see if a satisfactory contract can be mutually agreed at a fair and reasonable price. If no such agreement can be reached with the highest-ranking responder, the Authority will negotiate with the second-highest-ranking responder to attempt to reach a satisfactory agreement at a fair and reasonable price; and so on. The Authority reserves the right not to contract with any responder.

NO INDIVIDUAL BOARD MEMBER OR STAFF MEMBER OF THE AUTHORITY HAS THE POWER TO LEGALLY OR FINANCIALLY COMMIT THE AUTHORITY TO ANY CONTRACT, AGREEMENT OR PURCHASE ORDER FOR GOODS OR SERVICES UNLESS SPECIFICALLY AUTHORIZED TO DO SO BY THE AUTHORITY'S BOARD OF DIRECTORS OR A PERSON TO WHOM THE BOARD HAS EXPRESSLY DELEGATED SUCH AUTHORITY.

C. SUBMISSION PROCESS, DUE DATE, AND REQUIRED DOCUMENTS

1. Timeline

RFQ Released	May 1, 2023 by 5:00 PM (CT)
Receipt of Written Questions Due	May 25, 2023 by 5:00 PM (CT)
Q&A Emailed to Respondents	June 1, 2023 by 5:00 PM (CT)
Submittals Due	June 7, 2023 by 5:00 PM (CT)
Finalists Interviews, if any	Approximately June 28, 2023

Respondents are strongly encouraged to submit their proposals at least two (2) hours prior to the Proposal Deadline time to avoid last minute transmission issues.

2. Submission Formats

- a) Responders may submit Statements in hardcopy form by mail or courier or by electronic submission (e-mail). Regardless of the form of submittal, the required submittal format standards stated below must be used and all required forms and pages included. Electronic submittals must be in pdf format.
- b) Electronic submittals. Address a PDF of your submittal to drew@crmwa.com. Only one (1) electronic file with all required response information shall be submitted. A brief e-mail response from the Authority will be provided to acknowledge receipt of your submission. Pages requiring signatures must be scanned or electronically signed. The submission must be tabbed and “bookmarked” in PDF to match the response format required for this solicitation.
- c) Hardcopy submittals. Two (2) copies of the submittal, including all required forms and applicable supporting documentation, are required. Failure to submit the required number of copies may result in the response being declared unresponsive and not being considered. Hardcopy submittals must be submitted in a sealed envelope or container labeled with the RFQ identification and subject, addressed and delivered to the address stated below.
- d) It is the submitter’s responsibility to timely submit a complying and complete response to the Authority. The Authority will not be responsible for slow, delayed, or failed electronic transmissions that do not reach the stated Authority recipient by the stated deadline, or that are incomplete, corrupted, or otherwise unreadable, regardless of whether non-receipt or untimely receipt, or incompleteness, corruption, or unreadability is caused in whole or part by, without limitation, any failures of the World Wide Web, internet service providers (ISPs), or third party systems, firewalls, or infrastructure.

- e) Responses are limited to a maximum of 20 pages, not including resumes. Resumes should be limited to one (1) page per individual. Required forms (below) do not count toward the page limit. Required forms are the Submittal Response Checklist, Respondent Questionnaire, W-9 form, insurance requirements, Good Faith Effort Plan, SCTRCA Certificates, and the Form CIQ Conflict of Interest Questionnaire. The cover page and tabs do not count towards the page limit. Number each page starting with the cover letter, including text charts and graphic images.
- f) Responses should be clear, concise, and complete. They should be submitted using an 8 ½” by 11” portrait format (up to 11’ by 17” will be permitted for drawings, where warranted).
- g) By submission of a response, Respondent acknowledges that it has read and thoroughly understands the Scope of Services, agrees to all terms and conditions stated herein, and represents that it can perform all tasks as required.

3. Questions

All questions must be submitted in writing, directed to Drew Satterwhite P.E. (drew@crmwa.com). Questions and written responses by the Authority will be shared with all identified potential responders. If you would like to be apprised of Q&A, addendums, etc., please email Drew Satterwhite P.E. (drew@crmwa.com) requesting to be added to the mailing list specific to this RFQ.

4. Required Disclosures

Note that at least one kind of ethics-related disclosure is required to be made by Responders as part of the submission:

Texas Local Government Code chapter 176 requires vendors contracting with, *or merely seeking to contract with*, a local governmental entity to make certain disclosures regarding any covered familial relationships with a “local government officer”, or regarding gifts or other gratuities provided to, or financial or business relationships with, a local government officer or members of the officer’s immediate family. ***Your submission of a response to this RFQ will trigger your obligation under chapter 176 to file the appropriate disclosure with the Authority.*** The Form CIQ you should use is available on the Texas Ethics Commission website, along with explanations of what information is required.

Note that another type of disclosure is required to be made by any successful Responder:

HB 1295 (codified at Texas Local Government Code §2252.908) requires any person or entity actually contracting with a local governmental entity or a state agency to submit with the executed contract a disclosure Form 1295 Certificate (available on the Texas Ethics Commission website) identifying “interested persons” regarding the contract. The TEC website has detailed explanations, including TEC Rule 46 implementing the statute, and videos regarding how to prepare and provide the Certificate.

5. Required Representations

Texas law requires that any person who contracts with a local governmental entity make and honor the following representations:

Representation Regarding Israel. In compliance with Texas Government Code section 2270.002, **Contractor represents and verifies by its authorized signature below that it does not boycott Israel and will not boycott Israel for the term of this Agreement including any renewals or extensions.** In making this verification, “boycott Israel” means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.

No Contracts With Proscribed Entities. Under Texas Government Code section 2252.152, a governmental entity may not contract with, among others, the governments of Iran or Sudan, or with a designated terrorist organization; or in general with a company that does so contract. **Contractor represents and verifies by its authorized signature below that it does not contract with any of the entities proscribed under Texas Government Code chapter 2270 or sections 2252.152 and 2252.153, and that it is not identified on a list prepared by the Comptroller of the State of Texas under Texas Government Code sections 806.051 (companies with business operations in Sudan), 807.051 (companies with business operations in Iran), or 2252.153 (companies known to have contracts with or provide supplies or services to a foreign terrorist organization).**

D. RIGHT OF AUTHORITY TO CANCEL REQUEST FOR QUALIFICATIONS, TO ELECT NOT TO AWARD, TO REJECT RESPONSES, AND TO WAIVE INFORMALITIES OR IRREGULARITIES

The Authority expressly reserves the right to cancel this RFQ at any time without obligation or liability to any Respondents or potential Respondents, to elect not to award contracts as a result of the RFQ, to reject any or all responses, to waive any informality or irregularity in any response received, and to be the sole judge of the respective merits

of the responses received. Responders are solely responsible for all costs related to making a response to this RFQ; the Authority will not be responsible for any costs to a Responder or potential Responder even if, without limitation, the RFQ is canceled or the Responder's response is disqualified for any reason.

By submitting a response, you agree that you are solely responsible for any and all costs involved or incurred by you or on your behalf by any third party in or related to the preparation and submission of your response, and the provision of any additional information required by the Authority or of participation in any interview or presentation desired by the Authority, regardless of whether or not your response is considered or is rejected for any reason, or whether you are selected to be one of the final candidates or not.

E. EQUAL OPPORTUNITY IN AUTHORITY BUSINESS CONTRACTING

Race, religion, sex, color, ethnicity, and national origin are not used as criteria in the Authority's business contracting practices. Every effort is made to ensure that all persons regardless of race, religion, sex, color, ethnicity and national origin have equal opportunity to compete or make proposals for contracts and other business opportunities with the Authority.

F. INQUIRIES AND INTERPRETATIONS

Responses to inquiries that directly affect an interpretation or change to the RFQ will be issued in writing by the Authority as an addendum to the RFQ. All such addenda issued before the time that responses are due shall be considered part of this RFQ.

Only replies to inquiries made by issuing addenda shall be binding. Oral and other interpretations or clarifications are without legal effect and should not be relied on.

The Authority is aware of the time and effort you expend in preparing and submitting your response. Please let us know of any requirement causes you undue difficulty in responding to our Request for Qualifications. We want to facilitate your participation so that all responsible engineers can compete for the Authority's business.

G. THE AUTHORITY'S RIGHT TO AUDIT

At any time during the term of any contract that is awarded related to this RFQ, or thereafter, the Authority reserves the right to audit Contractor's records and books relevant to all services provided to the Authority under the contract, or to have a duly authorized audit representative of the Authority conduct an audit, at the Authority's expense and at reasonable times. In the event such an audit reveals any errors or overpayments by the Authority, Contractor shall refund to the Authority the full amount of such overpayments within thirty (30) days of such audit findings. The Authority, at its option, reserves the right to deduct and set off any amounts owing to the Authority by the Contractor against any payments due the Contractor from the Authority under a contract let in relation to this RFQ, or any other contract between Contractor and the Authority and

by submitting a response to this RFQ the Responder agrees to such right of refund to, and right of setoff by, the Authority.

H. ANTI-LOBBYING PROVISION

DURING THE PERIOD BETWEEN THE ISSUANCE OF THIS RFQ AND THE CONTRACT AWARD, IF ANY, PROPOSERS, INCLUDING THEIR PRINCIPALS OR OTHER OWNERS, OFFICERS, EMPLOYEES, CONTRACTORS, AGENTS AND REPRESENTATIVES, SHALL NOT DISCUSS OR PROMOTE THEIR PROPOSAL WITH ANY MEMBER OF THE AUTHORITY'S BOARD OF DIRECTORS OR STAFF OTHER THAN THE PERSON DESIGNATED IN THIS RFQ TO WHOM QUESTIONS ARE TO BE DIRECTED, EXCEPT UPON THE REQUEST OF THE AUTHORITY IN THE COURSE OF AUTHORITY-SPONSORED INQUIRIES, BRIEFINGS, INTERVIEWS, OR PRESENTATIONS.

This provision is not meant to preclude responders from discussing other matters with Authority Board members or Authority staff. The policy is intended to create a level playing field for all potential responders, assure that contract decisions are made in public, and to protect the integrity of the RFQ process. Its purpose is to stimulate competition, prevent favoritism and secure the best work and materials at the lowest practicable price, for the best interests and benefit of the Authority and its customers. Violation of this provision may result in disqualification of the responder.

I. NO ARBITRATION; REMEDIES CUMULATIVE

The Authority reserves the right to exercise any right or remedy available to it by law, contract, equity, or otherwise, including without limitation, the right to seek any and all forms of relief in a court of competent jurisdiction. The Authority shall not be subject to any arbitration process prior to exercising its unrestricted right to seek a judicial remedy, or without the Authority's written consent to arbitration. The remedies set forth herein or in any contract awarded are cumulative and not exclusive and may be exercised concurrently. To the extent of any conflict between this provision and another provision in, or related to, this document, this provision shall control.

J. INSURANCE REQUIREMENTS, PREVAILING WAGE RATES

1. General Liability:

Contractor's insurance shall include blanket contractual liability with a combined single limit of a minimum of \$1,000,000 each occurrence and \$2,000,000 in the aggregate and shall include the following:

- a) Blanket Contractual Liability
- b) Personal Injury and Advertising Injury
- c) Products and completed operations

2. Professional Liability:

Contractor's insurance shall include Professional Liability coverage with a combined single limit of a minimum of \$1,000,000 each occurrence and \$3,000,000 in the aggregate.

3. Business Automobile Liability:

Contractor's insurance shall include Business Automobile Liability coverage with a combined single limit of at least \$500,000 per occurrence, and include coverage for but not limited to the following:

- a) Bodily injury and property damage
- b) Any and All Owned, Non-Owned or Hired vehicles, including employee owned vehicles used for business in whole or in part

4. Workers' Compensation and Employers Liability Insurance:

Contractor must elect to obtain workers' compensation coverage pursuant to Section 406.002 of the Texas Labor Code. Contractor shall maintain said coverage throughout the term of the contract and shall comply with all provision of Title 5 of the Texas Labor Code to ensure that the Contractor maintains the coverage. Any termination of workers' compensation insurance coverage by Contractor or any cancellation or non-renewal of workers' compensation insurance coverage for the Contractor will constitute a material breach of the contract.

Contractor's insurance will include Employer's Liability coverage with limits of at least \$500,000 each accident.

5. Other Insurance Requirements:

Contractor's general liability and auto liability insurance policies through policy endorsement must include wording that states that the policy shall be primary and non-contributory with respect to any insurance carried by the Authority. The certificate of insurance described below must reflect that the above wording is included in evidenced policies. The Authority must be notified at least 30 days in advance of any cancellation of any of the required policies. The Authority must receive a copy of the full policy from the selected Contractor.

6. Prevailing Wage Rates:

Contractor will comply with the prevailing wage rate requirements set forth in Chapter 2258 of the Texas Government Code or its successor statute(s), and shall require subcontractors to comply with the applicable provisions of said law.

K. NO STATEMENT OF FEES FOR THE SUBJECT SCOPE OF WORK, EITHER HOURLY OR IN THE FORM OF A FIXED PROPOSAL COST, MAY BE INCLUDED WITH THE RESPONSE.

The Professional Services Procurement Act, Tex. Gov't Code ch. 2254, expressly provides that engineering services may not be acquired on the basis of competitive bidding (see § 2254.003(a)), but instead contemplates that agreement on actual contract

price and other terms will be accomplished by negotiation between the Authority and the successful candidate.

L. SUSPENSION AND DEBARMENT CERTIFICATION

Federal law (A-102 Common Rule and OMB Circular A-110) prohibits non-federal entities from contracting with or making sub-awards under covered transactions to parties that are suspended or debarred or whose principals are suspended or debarred. Covered transactions include procurement contracts for goods or services equal to or in excess of \$25,000 and all non-procurement transactions (e.g., sub-awards to sub-recipients).

Contractors receiving individual awards of \$25,000 or more and all sub-recipients must certify that their organization and its principals are not suspended or debarred by a federal agency.

Before an award of \$25,000 or more can be made to your firm, you must certify that your organization and its principals are not suspended or debarred by a federal agency.

I, the undersigned agent for the firm named below, certify that neither the firm nor its principals are suspended or debarred by a federal agency.

SUBMITTED BY:

Firm Name: _____

Firm's Federal Tax ID Number: _____

Signature of Company Official: _____

Printed Name of Company Official: _____

Date Signed: _____

PRIVACY NOTIFICATION

The principal purpose for requesting this information is for use in the selection process for professionals commissioned by the Canadian River Municipal Water Authority.

Furnishing all information requested on the form is mandatory. Failure to provide such information will delay or may even prevent completion of the action for which the form is being completed. Information on the form is used by the Authority in the consideration of commissions to professionals.

If you consider any portion of your response to be privileged or confidential by application of any statute or judicial decision, including trade secrets and commercial or financial information, clearly identify those portions. **Remember that documents submitted to the Authority may be subject to disclosure under the Texas Public Information Act, chapter 552 of the Texas Government Code.**

Responses are opened in a manner that avoids disclosure of the contents to competing responders and keeps the responses confidential during negotiations. All responses are open for public inspection after the contract is awarded, although trade secrets and confidential information in the responses may be protected from public disclosure to the extent permitted by the Public Information Act.

To the extent permitted by law, the Authority will honor your notations of trade secrets and confidential information and decline to release such information initially, but once a contract is awarded, the final determination of whether a particular portion of your response is a trade secret or commercial or financial information that may be withheld from public inspection may be made by the Texas Attorney General or a court. In the event an open records request is received for your response or any portion of it that you have marked as being confidential, you will be notified of the request and have an opportunity to justify your legal position in writing to the Texas Attorney General under section 552.305 of the Texas Government Code. In the event the Texas Attorney General or a court determines that the information is not privileged under section 552.110 or another section of the Public Information Act, section 252.049 of the Texas Local Government Code, or other law, that information will be made available to the requester.

Marking your entire submittal CONFIDENTIAL/PROPRIETARY is not in conformance with the Texas Public Information Act and will not be effective.

APPENDIX A

(Historical Water Quality Data)

LAKE MEREDITH - Intake Tower

	Temp (C)	Ph	Specific Conductance	Dissolved Oxygen	P. Alkalinity	T. Alkalinity	Fluoride	Chloride (IC)	Nitrate	Phosphate	Sulfate	Sodium	Potassium	Calcium	Magnesium	Hardness	TDS	Turbidity
Jan-03	5.9	8.39	2.622															
Feb-03	5.2	8.46	2.663		4.0	184	1.14	435	0.09	NT	419	411	8.4	67	59			
Mar-03	9.0	8.35	2.609		-	184	0.74	455	ND	ND	408	422	8.4	65	58			
Apr-03	16.5	8.40	2.619		8.0	188	0.72	467	0.09	ND	418	426	8.1	55	48			
May-03	22.0	8.48	2.701		10.0	188	0.94	491	0.07	ND	421	435	8.6	68	62			
Jun-03	21.7	8.37	2.772		4.0	186	0.82	500	ND	ND	446	449	8.7	45	49			
Jul-03	25.0	8.45	2.721		8.0	182	0.82	489	ND	ND	423	435	8.5	44	48			
Aug-03	25.7	8.38	2.764		6.0	183	0.79	503	0.01	ND	444	438	8.5	43	48	357		
Oct-03	19.2	8.55	2.762		12.0	180	1.00	496	0.04	ND	441	439	8.6	62	50	352		
Nov-03	15.4	8.60	2.773		8.0	186	0.77	499	ND	ND	443	456	8.6	63	50	355		
Dec-03	9.7	8.47	2.745		7.2	184	0.78	507	0.02	ND	439	455	9.4	64	51	360		
Jan-04	4.3	8.60	2.849		8.0	180	0.89	528	0.10	N/D	450	466	8.9	63	51	372		
Feb-04	4.7	8.32	2.867		6.0	194	0.74	519	<.005	ND	449	472	8.2	66	52	364		
Mar-04	6.4	8.58	2.870		8.0	188	0.84	522	0.02	ND	449	471	8.7	65	53	374		
Apr-04	15.9	8.41	2.924		6.0	188	0.84	524	ND	ND	445	480	9.0	49	54	380		
May-04	18.2	8.53	2.909		4.0	192	0.87	528	0.05	ND	445	457	9.3	65	51	376		
Jun-04	21.5	8.41	3.006		8.0	192	0.92	541	ND	ND	452	462	9.0	71	54	388		
Jul-04	25.6	8.44	2.869		8.0	168	0.90	509	0.03	ND	429	432	8.6	69	51	366		
Aug-04	25.5	8.41	2.825		4.0	180	0.86	500	<.02	ND	417	430	8.1	65	49	354		
Oct-04	20.0	8.60	2.646		8.0	182	0.80	479	0.03	ND	387	385	9.5	68	47	336		
Nov-04	11.9	8.66	2.559		10.0	184	0.92	454	0.08	ND	359	365	9.1	66	45	334		
Jan-05	8.6	8.55	2.527		8.0	180	0.82	440	0.06	ND	337	397	8.4	69	45	354		
Feb-05	6.6	8.57	2.578		4.0	180	0.84	467	0.03	ND	365	375	7.7	64	42	328		
Mar-05	13.3	8.52	2.537		8.0	184	0.83	470	0.22	0.56	336	371	7.7	72	54	336		
Apr-05	15.5	8.58	2.647		8.0	192	0.59	489	-	-	364	396	8.7	68	46	350		
May-05	21.6	8.63	2.740		10.0	192	0.72	508	-	-	385	398	10.3	70	47	346		
Jun-05	20.2	8.51	2.731		8.0	190	0.68	508	-	-	375	404	7.9	72	46	352		
Jul-05	24.1	8.44	2.577		6.0	188	0.80	472	-	-	348	380	8.2	67	43	356		
Aug-05	25.9	8.46	2.658		4.8	178	0.55	488	0.08	ND	356	308	6.3	60	37	330		
Sep-05	23.1	8.43	2.633		4.0	180	0.57	493	0.01	<0.01	357	386	7.5	63	46	332		
Oct-05	18.2	8.58	2.666		4.0	180	0.74	500	<0.01	<0.01	362	395	8.2	62	47	332	1.577	6.79
Nov-05	15.6	8.55	2.689		4.0	178	0.38	505	0.01	ND	365	427	8.4	57	50	332	1.595	8.41
Dec-05	6.9	8.64	2.656		4.8	184	0.51	471	0.03	<.01	342	407	7.6	63	47	340	1.622	2.88
Jan-06	6.1	8.46	2.760		4.0	186	0.50	504	<.02	0.54	369	395	7.9	50	48	348	1.608	3.18
Feb-06	7.6	8.55	2.778		4.0	184	0.58	520	<.02	<.02	381	417	8.3	56	49	356	1.630	3.74
Mar-06	11.3	8.15	2.582		4.0	184	0.64	527								352	1.680	5.12
Apr-06	17.3	8.49	2.826		6.0	182	0.07	541	<.02	<.02	391	401	9.6	-	-	358	1.686	5.12
May-06	21.7	8.55	2.921		8.0	192	0.59	543	<.02	<.02	391	408	6.9	65	45	386	1.724	14.30
Jun-06	24.7	8.41	2.955		4.0	188	0.78	564	<.02	<.02	410	432	7.5	62	48	364	1.755	3.03
Jul-06	26.0	8.53	2.994		4.0	184	0.73	579	<.02	ND	421	461	7.9	68	49	372	1.810	5.40
Aug-06	25.4	8.54	2.983		4.0	176	0.86	583	0.03	0.30	421	-	-	-	-	364	1.836	5.32
Sep-06	25.2	8.58	2.896		4.0	174	0.59	584	<.01	ND	419	503	3.4	-	-	356	1.770	
Oct-06	20.4	8.65	2.944		6.0	178	0.64	565	0.01	ND	408	496	7.9	-	65	360	1.580	11.60
Nov-06	11.3	8.15	2.582		4.0	184	0.64	527								352	1.680	5.12
Dec-06	9.8	8.63	2.898		-	184	0.96	490	0.22	ND	351	399	12.1	80	50	344	1.526	10.80
Jan-07	6.8	8.28	2.919		2.0	186	0.66	572	0.06	0.27	418	460	10.4	76	54	372	1.770	6.67
Mar-07	9.1	8.58	2.967		2.0	188	2.14	586	0.04	0.93	422	572	14.9	84	66	388	1.821	5.01
Apr-07	15.6	8.43	2.941		4.0	186	0.63	578	0.02	ND	413	446	9.5	78	52	388	1.775	3.98
May-07	16.9	8.51	2.974		4.0	184	0.78	576	0.02	ND	405	459	9.3	76	53	396	1.776	5.56
Jun-07	22.0	8.60	2.950		8.0	196	0.65	591	<.02	ND	414	459	9.4	69	54	396	1.786	4.04
Jul-07	27.0	8.40	3.005		4.0	184	0.64	595	<.02	ND	416	468	9.5	69	54	388	1.833	7.23
Aug-07	27.0	8.40	3.029		4.0	180	0.75	634	0.03	ND	423	480	9.3	73	55	384	1.824	6.03
Sep-07	25.8	8.59	3.035		4.0	176	0.63	638	0.04	ND	424	531	9.7	72	64	382	1.831	6.75
Oct-07	23.6	8.56	3.081		8.0	176	0.56	650	0.10	ND	440	396	10.2	74	57	372	1.895	2.98
11/26/07	10.4	8.30	3.138		4.0	174	1.91	668	0.04	ND	449	518	10.3	74	60	100	1.932	8.24
12/5/08	9.4	8.34	3.157		2.0	176	0.72	672	<.02	ND	448	515	10.5	72	61	400	1.930	8.51
1/15/08	6.5	8.41	3.144		-	180	0.67	664	<.02	ND	442	543	10.5	78	63	400	1.943	6.50
2/19/08	6.9	8.49	3.149		2.0	180	0.65	678	0.04	ND	-	532	10.4	74	62	400	1.931	3.32
3/26/08	13.7	8.44	3.163		-	184	0.65	687	0.02	ND	461	535	10.6	75	63	420	2.025	5.42
4/21/08	16.9	8.55	3.277		4.0	184	0.75	695	<.02	0.49	466	523	3.0	81	62	420	2.043	
5/28/08	22.5	8.60	3.427		8.0	190	0.70	727	<.02	ND	490	554	11.3	84	65	NT	2.218	9.67
6/9/08	23.4	8.60	3.419		4.0	192	0.73	734	0.03	ND	494	510	8.7	107	66	NT	2.243	8.22
7/23/08	27.2	8.80	3.496		6.0	170	0.81	769	<.02	ND	NT	521	10.4	95	66	416	2.132	19.30
8/7/08	26.9	8.64	3.404		2.0	176	0.64	713	0.31	ND	471	537	9.6	93	64	406	2.068	15.80
9/16/08	21.7	8.80	2.834		4.0	180	0.68	581	<.02	ND	383	461	10.0	88	54	340	1.691	10.60
10/28/08	17.5	9.00	2.819		4.0	184	0.70	589	0.06	ND	382	462	9.8	101	55	384	1.702	23.30
11/11/08	15.4	9.00	2.683		2.0	182	0.67	557	0.04	ND	353	423	8.0	67	50	336	1.656	8.17
12/17/08	9.0	8.60	2.575		2.0	184	0.43	555	0.02	ND	346	433	11.0	109	52	344	1.673	12.40
1/26/09	22.7	8.80	2.398		2.0	192	0.60	577	<.02	ND	357	444	9.4	120	56	256	1.641	6.52
2/3/09	4.1	8.80	2.824		2.0	188	0.50	575	0.03	ND	ND	430	8.5	71	54	360	1.692	5.79
3/2/09	12.0	8.80	2.719		2.0	188	0.56	591	0.14	ND	367	480	8.0	112	57	372	1.687	3.55
4/22/09	16.6	8.70	2.912		0.5	194	0.70	621	<.02	ND	386	482	8.5	100	57	400	1.827	
5/27/09	21.8	8.80	2.954		2.0	196	0.68	633	<.02	ND	392	495	8.5	117	57	404	1.895	13.40
6/9/09	21.4	8.60	3.044		4.0	190	0.69	638	<.02	ND	389	495	8.5	125	58	412	1.810	12.00
7/15/09	29.2	8.65	3.092		6.0	188	-	673	0.04	0.06	410	529	9.3	96	63	396	1.900	6.84
8/19/09	26.3	8.40	3.037		4.0	178	0.52	682	<.02	ND	409	531	9.1	97	65	390		8.52
10/26/09	14.4	8.53	3.103		10.0	176	0.77	690	0.07	ND	411	539	9.7	129	33	388	1.975	15.90
11/10/09	15.4	8.70	3.127		16.0	180	0.79	693	0.04	ND	414	507	9.4	100	62	392	2.011	25.50
12/16/09	7.6	8.40	3.135		8.0	180	0.88	713	0.04	ND	424	605	13.2	73	64</			

LAKE MEREDITH - Intake Tower

	Temp (C)	Ph	Specific Conductance	Dissolved Oxygen	P. Alkalinity	T. Alkalinity	Fluoride	Chloride (IC)	Nitrate	Phosphate	Sulfate	Sodium	Potassium	Calcium	Magnesium	Hardness	TDS	Turbidity
10/21/10	70.0	8.42	3,672		16.0	172	0.88	846	0.02	ND						436	2,347	14.50
11/29/10	10.4	8.40	3,665		12.0	180	0.67	868	<.02	ND	539	686	10.8	88	67	456	2,393	10.00
12/14/10	9.4	7.90	3,850		2.0	180	0.67	891	0.07	ND	497	713	10.9	75	62	450	2,379	
1/25/11	-	7.85	3,718		-	182	0.61	909	0.07	ND	499	700	12.0	77	63	468		
2/22/11	9.0	7.90	3,768		2.0	184	0.61	927	<.02	ND	534	440	6.6	50	44	468	2,464	5.23
4/26/11	16.7	8.18	4,133		12.0	184	0.85	993	0.06	NA	533	785	12.3	94	88	496	2,578	17.70
5/24/11	23.8	8.40	4,432		12.0	200	1.82	990	0.04	ND	556	919	13.1	119	85	528		
6/15/11	23.0	8.40	4,521		8.0	204	1.86	1,086	0.02	ND	616	876	12.9	102	91	548	2,786	6.16
7/5/11	25.6	8.50	4,588		10.0	196	0.80	1,114	0.34	ND	624	934	13.7	100	95	542	2,935	7.15
8/3/11	28.1	8.96	4,970		12.0	172	0.66	1,174	0.11	ND	654	930	14.1	81	84	512	2,929	8.45
9/20/11	22.5	8.90	5,100		12.0	162	0.76	1,288	0.19	0.03	704	931	14.3	70	82	-	3,196	17.10
10/10/11	19.4	8.90	5,140		8.0	174	0.82	1,305	0.17	0.03	708	1,008	15.4	79	87	552	3,291	24.30
11/18/11	15.0	8.70	5,160		10.0	180	0.83	1,224	0.02	ND	667	939	17.0	77	84	574	3,349	11.60
12/12/11	5.0	9.10	5,520		10.0	160	0.88	1,293	0.43	ND	709	1,037	14.3	107	95	584	3,390	11.50
1/16/12	8.1	8.80	5,320		8.0	190	0.98	1,324	0.03	ND	729	1,037	15.6	107	97	600	3,405	7.85
2/21/12	11.0	8.85	5,130		4.0	192	0.97	1,355	0.13	ND	752	1,049	14.1	105	77	606	3,327	10.60
3/6/12	9.4	8.85	5,130		6.0	194	0.97	1,281	<.02	ND	693	1,034	14.2	103	79	612	3,342	6.98
4/17/12	17.6	8.90	5,180		10.0	192	1.03	1,217	0.10	0.67	693	1,852	13.9	100	82	596	3,311	19.60
5/14/12	19.2	8.20	5,210		4.0	188	0.98	1,203	0.03	ND	688	1,815	14.0	106	81	608	3,200	26.50
6/6/12	22.9	8.86	5,110		12.0	194	0.79	1,207	0.43	ND	694	918	14.1	116	85	602	3,212	11.70
7/25/12	28.6	8.86	5,590		0.4	182	1.25	1,187	0.03	ND	678	1,096	17.4	90	77	628	3,541	9.60
8/21/12	24.2	8.78	5,820		4.0	172	0.78	1,255	0.37	ND	715	1,230	18.5	192	60	632	3,733	8.55
9/5/12	25.9	8.80	5,430		8.0	174	0.84	1,323	0.42	ND	749	1,979	19.5	202	61	644	3,742	4.50
10/2/12	21.2	8.80	5,970		8.0	184		1,475	0.24	ND	845	1,293	19.8	203	67	652	3,715	9.84
11/5/12	15.1	8.97	6,120		12.0	188	1.00	1,525	0.13	0.18	852	1,255	18.4	121	102	676	3,876	9.39
12/11/12	8.7	8.51	5,920		12.0	190	1.00	1,525	<.02	ND	843	1,278	17.9	109	98	688	3,886	9.24
1/7/13	2.7	7.41	6,440		8.0	192	1.02	1,520	0.07	ND	834	1,241	17.7	107	98	716	3,940	10.50
2/4/13	8.3	8.13	6,120		8.0	192	0.94	1,546	0.36	0.13	868	1,316	18.2	117	100	696	4,035	9.02
3/4/13	7.4	8.62	6,380		6.0	194	0.94	1,545	0.44	0.13	871	1,230	17.7	133	100	720	3,905	8.75
4/1/13	15.1	8.94	6,010		12.0	196	0.95	1,489	0.08	ND	722	1,208	17.7	135	102	720	4,076	13.50
5/1/13	16.8	8.97	6,500		8.0	208	0.96	1,746	0.11	ND	933	1,338	18.0	152	115	720	4,140	28.20
6/4/13	22.2	8.62	6,700		8.0	220	1.21	1,763	<.02	ND	969	1,384	18.3	115	113	792	4,340	24.30
7/9/13	26.5	8.86	7,460		8.0	224	1.11	1,871	0.10	ND	1,034	1,398	21.6	111	115	812	4,776	8.64
8/5/13	28.2	8.91	7,770		8.0	216	1.04	1,885	0.09	0.53	1,054	1,464	23.1	112	117	824		8.39
9/16/13	25.0	8.96	6,440		6.0	212	0.91	1,584	0.04	ND	880	1,388	22.8	111	116	704	3,964	7.88
10/7/13	21.1	8.79	4,864		4.0	192	NT	1,168	0.35	ND	674	924	15.9	101	89	532	3,008	13.90
11/12/13	12.3	8.92	4,590		4.0	204	0.77	1,181	<.02	ND	674	955	16.0	81	91	552	2,950	11.20
12/2/13	8.0	8.95	5,060		8.0	212	0.77	1,191	0.06	0.69	679	962	15.8	94	91	568	3,069	7.42
1/7/14	4.2	8.88	4,998		2.0	212	0.74	1,189	0.05	ND	678	950	15.6	118	97	574	3,093	7.42
2/4/14	5.3	8.62	4,885		2.0	216	1.67	1,181	0.96	ND	821	967	15.0	117	100	592	3,065	10.40
3/4/14	7.8	8.58	5,040		-	214	0.88	1,220	0.07	ND	694	1,025	15.0	116	57	612	3,172	4.12
5/20/14	20.9	8.61	5,500		2.0	224	1.21	1,312	-	0.21	742	1,096	18.6	140	108	668	3,394	4.10
6/11/14	23.9	8.81	5,020		4.0	220	0.83	1,204	0.07	ND	682	956	16.6	135	97	612	3,124	11.40
7/8/14	27.4	8.68	4,077		-	198	0.81	919	0.07	ND	512	797	14.5	401	77	500	2,491	17.00
8/5/14	25.0	8.49	3,685		-	194	0.58	846	0.06	ND	465	738	14.2	117	73	448	2,238	6.38
9/2/14	27.4	8.71	3,545		-	188	0.56	813	0.03	ND	437	641	0.7	90	59	424	2,152	7.57
10/6/14	21.1	8.84	3,289		-	192	0.66	796	<.02	ND	409					424	2,013	15.40
10/11/14	14.6	8.43	3,414		-	184	0.61	754	0.09	ND	397	502	12.6	230	145	420	2,040	14.50
12/9/14	9.7	8.48	3,337		-	192	0.65	812	<.02	ND	431	483	15.6			426	2,107	14.70
1/26/15	5.7	8.44	3,566		-	192	0.54	863	0.02	ND	427	714	13.2	107	67	440	2,203	6.49
2/10/15	7.8	8.59	2,401		-	196	0.66	804	0.06	ND	430	662	13.6	106	57	440	2,128	6.36
3/3/15	6.9	8.68	3,614		8.0	208	0.98	843	0.07	ND	449	577	14.1	108	740	448	2,186	6.55
4/22/15	16.4	8.44	3,736		8.0	216	0.68	890	ND	ND	459	610	12.7	109	53	472	2,310	9.20
5/6/15	18.7	8.73	3,860		8.0	2	0.95	848	-	ND	445	693	12.9	121	58	480	2,277	13.70
6/2/15	23.4	8.84	3,228		8.0	200	0.73	697	0.05	ND	396	583	11.4	117	52	400	1,913	9.56
7/14/15	28.3	8.84	2,917		8.0	192	0.60	616	0.04	ND	321	502	9.9	100	47	364	1,710	8.69
8/24/15	25.5	8.52	2,579		4.0	188	0.58	528	0.24	ND	271	442	9.3	106	-	324	1,511	4.60
9/22/15	23.9	7.79	2,531		4.0	190	0.54	527	0.34	ND	267	430	8.8	80	-	320	1,487	7.21
10/26/15	18.1		2,511		2.0	186	0.66	500	0.51	ND	275	452	9.3	99	42	320	1,499	8.97
11/12/15	15.3	8.43	2,476		4.0	192	0.53	503	0.08	ND	249	430	9.2	108	-	320	1,487	2.48
12/8/15	11.2	8.68	2,386		4.0	196	0.53	517	0.16	ND	255	432	9.1	110	42	312	1,404	6.32
1/25/16	6.8	8.32	2,536		2.0	198	0.53	525	0.18	ND		439	9.1	119	47	324	1,437	4.26
4/4/16	13.5	8.51	2,662				0.56	566	0.25	ND	279						1,557	5.96
6/21/16	26.6	8.57	2,758		2.0	192		585		ND		493	9.4	113	48	352	1,655	6.00
7/26/16	30.5	8.59	2,833		6.0	190	0.56	608	0.19	ND	299	499	10.7	120	49	344	1,656	3.22
8/16/16	25.8	8.41	2,843		2.0	194	0.53	560	0.19	ND	276	497	9.6	118	49	346	1,658	5.32
9/13/16	23.5	8.35	2,845		4.0	192	0.55	609	0.17	ND	298	501	9.7	114	49	346	1,676	8.45
10/14/16	22.9	8.75	2,853		4.0	196	0.49	630	0.17	ND	265	503	9.9	114	50	344	1,680	6.13
11/1/16	NT	NT			6.0	196	0.54	619	0.18	ND	295	513	9.8	112	49	346	1,712	6.10
12/5/16	10.7	8.47	2,914		6.0	196	0.49	643	0.03	ND	351	477	8.9	73	43	346	1,735	9.44
1/10/17	5.9	8.52	3,018		4.0	196	0.50	668	0.02	ND	363	481	9.1	75	43	352	1,725	9.60
2/8/17	7.4	8.57	3,077		4.0	200	0.46	650	ND	ND	316	443	8.1	70	40	364	1,713	3.30
3/7/17	9.2	8.25	3,004		1.0	200	0.54	647	ND	ND	314	490	9.3	-	-	364	1,717	6.80
4/20/17	17.8	8.67	3,068		1.6	196	0.73	673	0.41	ND	324	525	9.8	73	47	364	1,823	7.80
5/3/17	15.2	8.42	3,015		2.0	192	0.55	668										

LAKE MEREDITH - Intake Tower

	Temp (C)	Ph	Specific Conductance	Dissolved Oxygen	P. Alkalinity	T. Alkalinity	Fluoride	Chloride (IC)	Nitrate	Phosphate	Sulfate	Sodium	Potassium	Calcium	Magnesium	Hardness	TDS	Turbidity
5/7/18	17.8	8.46	2,835		8.0	224	0.57	586	<.02	N/D	309	499	8.8	75	42	346	1,429	0.80
6/12/18	25.1	8.38			8.0	208	0.57	585	N/D	N/D	286	504	8.8	79	42	344	1,678	4.30
7/16/18	27.6	8.46	2,943		6.0	192	0.50	611	N/D	N/D	319	516	9.0	96	-	344	1,663	4.60
8/15/18	25.8	8.44	2,965		4.0	196	0.58	618	N/D	N/D	321	509	9.2	-	-	344	1,705	1.83
9/10/18	24.4	8.36	2,976		4.0	202	0.60	621	0.02	N/D	322	524	9.3	96	45	336	1,732	7.37
10/4/18	21.8	8.86	3,004		6.0	196	0.60	631	N/D	N/D	328					344	1,746	6.33
11/2/18	16.8	8.57	2,927		6.0	200	0.67	603	0.25	N/D	318	520	9.2	73	44	344	1,728	13.80
12/10/18	8.8	8.50	2,969		4.0	200	0.63	617	0.02	N/D	322	519	9.3	71	45	336		2.86
1/7/19	7.0	8.63	2,948		8.0	200	0.51	628	0.06	ND	325	523	9.4	91	45	338	1,711	4.57
2/4/19	8.1	8.64	2,978		4.0	200	0.52	633	0.05	N/D	327	527	9.3	71	45	348	1,708	2.81
3/11/19	6.6	8.53	3,053		4.0	204	0.51	633	0.06	N/D	326	467	9.2	69	44	352	1,750	4.97
4/24/19	15.0	8.41	3,065		10.0	204	0.46	648	0.05	N/D	332	478	9.1	77	45	356	1,757	4.34
5/13/19	17.6	8.49	3,008		6.0	200	0.48	639	0.03	N/D	332	477	9.4	78	47	352	1,644	4.85
6/10/19	21.9	8.37	2,974		4.0	196		645		N/D							1,732	4.08
7/1/19	24.7	8.48	2,951		2.0	184	0.46	627	N/D	N/D	325	457	9.1	70	44	334	1,654	6.20
8/5/19	25.9	8.21	3,037		6.0	184	0.72	641	ND	N/D	327	471	9.1	69	41	332	1,747	5.20
9/10/19	25.9	8.22	3,064	7.17	4.0	178	0.68	652	N/D	N/D	332	477	7.7	65	46	336	1,775	3.50
10/7/19	21.9	7.85	2,968		4.0	184	0.73	645	N/D	N/D	305	477	9.5	64	46	344	1,742	9.40
11/5/19	13.3	8.55	2,914		4.0	188	0.58	640	N/D	N/D	324	474	9.1	72	44	344	1,681	11.10
12/2/19	8.3	8.40	2,962	-	4.0	186	0.59	640	N/D	N/D	325	472	9.1	69	44	340	1,730	6.60
1/20/20	8.1	8.50	2,924	-	2.0	186	0.31	643	0.03	N/D	328	483	9.9	74	45	344	1,741	3.20
2/17/20	7.1	8.70	2,926	-	2.0	184	0.31	642	0.02	N/D	326	391	9.7	89	41	340	1,749	3.10
3/2/20	8.7	8.61	2,935	11.40	4.0	192	0.48	648	0.03	N/D	330	399	9.8	77	46	336	1,734	2.83
4/6/20	14.0	8.62	3,048		4.0	192	0.59	657	0.04	N/D	336	493	9.4	93	47	348	1,730	2.75
5/4/20	18.1	8.57	3,021		2.0	196	0.48	673	0.11	N/D	354	501	9.5	97	48	356		4.08
6/1/20	21.4	8.53	3,245	8.49	0.4	196	0.57	683	0.05	N/D	348	505	9.7	96	50	372	1,848	2.98
7/6/20	25.3	8.47	3,127	-	0.4	192	0.59	694	0.03	N/D	354	513	9.9	96	48	360	1,853	2.38
8/11/20	28.1	8.62	3,195	-	4.0	188	0.55	711	0.07	N/D	358	519	9.7	76	50	360	1,877	2.96
9/1/20	25.0	8.40	3,248	6.96	4.0	184	0.53	716	0.02	N/D	359	523	-	74	50	356	1,899	3.06
12/14/20	10.1	8.76	3,314		2.0	190	0.73	744	<.02	N/D	376	538	10.7	76	51	352	1,921	4.23
1/5/21	8.0	8.63	3,384	10.80	2.0	188	0.70	751	0.01	N/D	374	548	10.1	96	52	372	1,941	4.82
2/20/21	8.2	8.70	3,385	11.60	2.0	192	0.59	747	<.002	N/D	376	537	10.0	78	52	372		4.20
3/1/21	6.7	8.70	3,377	11.90	2.0	190	0.60	761	<.02	N/D	381	550	10.2	78	54	378	2,007	2.57
4/27/21	14.3	8.74	3,411	9.39	8.0	196	0.63	776	0.03	N/D	391	560	10.6	83	56	384	2,010	1.54
5/17/21	19.2	8.51	3,433	9.10	8.0	200	0.66	770	0.02	N/D	385	559	-	78	55	388	2,058	3.56
6/15/21	27.0	8.42	3,415	8.52	10.0	192	0.55	758	<.02	N/D	381					376	2,034	3.86
7/12/21	25.5	8.14	3,364	7.57	4.0	180	0.55	743	<.02	N/D	370	553	10.6	69	46	352	1,970	4.02
8/2/21	26.2	8.34	3,281	6.20	4.0	178	0.55	732	<.02	N/D	366	542	11.8			358	1,990	3.41
9/23/21	22.7	8.41	3,381	7.16	8.0	180	0.55	754	N/D	N/D	369	559	10.3	72	85	352	1,928	5.96
10/11/21	20.5	8.34	3,460	6.85	6.0	184	0.55	758	-	2.70	371	551	9.9	71	-	360	2,003	5.12
11/1/21	17.4	8.39	3,339	8.19	6.0	186	0.56	773	0.04	0.25	377	550	9.8	72	-	364	1,986	11.50
12/13/21	10.6	8.49	3,502	10.18	4.0	188	0.62	782	0.04	N/D	382	589	10.6	72	-	368	2,091	5.35
1/3/22	9.0	8.50	3,460	10.20	2.0	184	0.61	787	0.09	N/D	382	602	10.7	68	-	370	2,049	4.18
2/21/22	7.4	8.66	3,999		8.0	192	0.72	786	0.09	0.07	385	623	10.9	69	-	374	2,108	3.80
3/3/22	7.6	8.65	3,940	12.60	6.0	196	0.55	799	0.07	N/D	394	602	10.1	75	49	378	2,105	4.78
4/18/22	13.3	8.51	3,525	10.20	2.0	192	0.60	812	0.07	N/D	401	622	10.3	69	-	396	2,146	5.67
5/16/22	19.1	8.44	3,634	8.49	8.0	200	0.58	827	0.06	N/D	406	628	11.3	-	-	400	2,111	6.21
6/6/22	20.3	8.34	3,636	7.91	6.0	200	0.69	832	0.04	N/D	411	642	11.2	74	43	404	2,151	6.62
7/5/22	26.4	8.38	3,742	8.37	4.0	196	0.67	843	<.02	N/D	418	647	11.5		-	400	2,238	4.25
8/8/22	28.4	8.41	3,804	8.54	4.0	188	0.71	858	0.14	N/D	426	662	12.5	87	-	396	2,245	2.49
9/6/22	24.6	8.14	3,576	5.99	4.0	184	0.67	847	0.07	N/D	411	649	11.7	-	-	388	2,204	5.02
10/3/22	22.8	8.58	3,470	8.01	4.0	192	0.62	841	0.01	N/D	405	655	11.0	-	-	392	2,164	6.30
11/8/22	16.6	8.60	3,599	9.62	8.0	192	0.67	868	N/D	N/D	420	651	11.1	74	50	388	2,196	8.82
12/5/22	10.9		3,649	10.20	8.0	196	0.68	866	0.05	0.25	413	576	11.5	80	52	396	2,241	8.66
1/9/23	10.8	8.68	3,084	10.70	6.0	196	0.77	873	0.11	N/D	423	489	10.8	122	-	400	2,258	1.95
2/13/23	6.1	8.30	3,725	11.30	2.0	196	0.69	885	0.03	0.07	432	646	12.1	82	52	410	2,287	3.46
3/7/23	8.6	8.05	3,696	11.20	2.0	196	0.66	892	0.04	N/D	436	650	11.8	78	-	400	2,142	2.61
4/17/23	15.7	8.50	3,837	9.50	4.0	196	0.75	891	1.02	1.71	427	697	11.3	101	-	412	2,360	2.96
Average	17.2	8.52	3,467	9.17	5.1	189	0.72	764	0.11	0.49	446	621	10.9	88	64	414	2,167	7.74
Std. Dev.	8.3	0.24	1,029	1.77	3.4	16	0.24	294	0.15	0.61	158	284	3.3	36	53	110	690	4.98
Max	70.0	9.10	7,770	12.60	16.0	224	2.14	1,885	1.02	2.70	1,054	1,979	23.1	401	740	824	4,776	28.20
Min	2.7	7.41	1,660	5.99	-	2	0.07	435	-	0.03	249	308	0.7	11	33	100	1,373	0.80

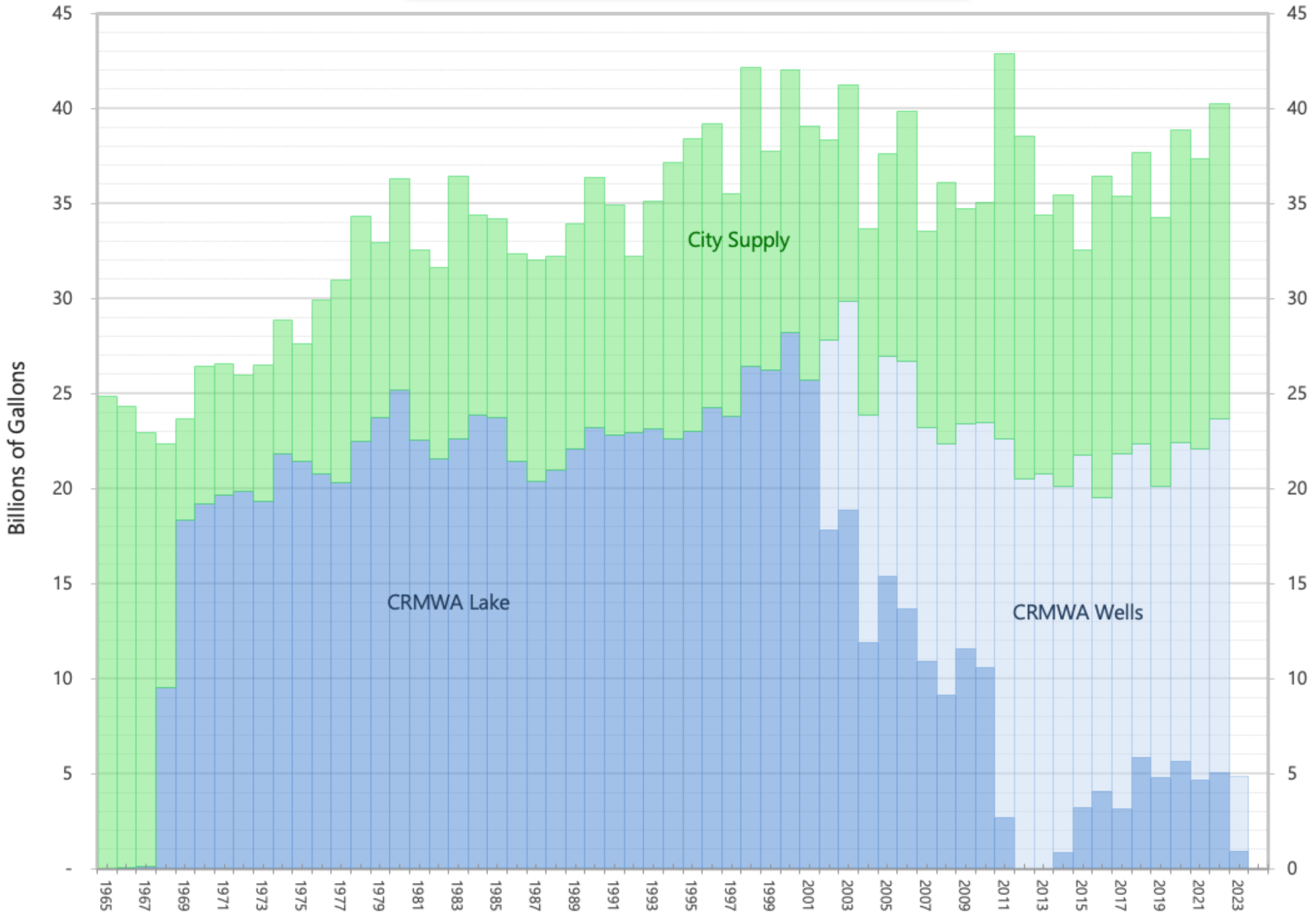
JOHN C WILLIAMS - Wells

	Temp (C)	Ph	Specific Conductance	Dissolved Oxygen	P. Alkalinity	T. Alkalinity	Fluoride	Chloride (Cl)	Nitrate	Phosphate	Sulfate	Sodium	Potassium	Calcium	Magnesium	Hardness	TDS	Turbidity
Jan-10	17.8	8.10	625		-	184	0.72	63	1.91	ND	41	55	6.4	65	26	204	397	0.78
Feb-10	18.4	7.33	621		-	178	0.62	65	1.83	ND	42	55	5.4	9	21	204	366	0.25
Mar-10	18.5	7.30	625		-	178	0.63	65	1.85	0.72	43	54	5.4	9	21	200	368	0.10
Apr-10	18.7	7.80	673		-	178	0.79	71	1.84	ND	47					208	386	0.71
May-10	18.7	7.70	688		-	186		65								208	381	0.20
Jun-10	19.3	7.00	706					75									397	0.60
Jul-10	20.0	7.70	729		-	186	0.74	75	1.80	ND	47	63	9.5	35	23		388	0.54
Aug-10	20.6	7.50	640		-	180	0.76	75	1.95	ND	48	-	-	-	-	206	405	0.25
Sep-10	20.4	7.00	744		-	186	0.73	98	1.60	ND	-	85	5.7	45	25	210	459	0.46
Oct-10	NT	8.18	756		-	188	0.75	99	1.67	ND						212	463	0.79
Nov-10	18.9	7.40	788		-	190	0.68	98	1.56	ND	47	82	5.3	66	25	220		0.75
Dec-10	20.2	7.10	792		-	188	0.74	102	1.68	0.09	56	78	5.2	66	42	218	452	
Jan-11	-	7.37	821		-	186	0.70	115	1.58	0.10	61	90	5.2	56	25	222		
Feb-11	18.2	7.10	747		-	186	0.60	106	1.69	ND	50	50	3.2	35	15	216	455	0.76
Mar-11																		
Apr-11	19.7	7.30	1,238		-	180	0.79	228	1.53	NA	92	169	6.2	70	35	256		0.35
May-11	20.5	7.10	1,267		-	188	1.75	217	1.50	ND	85	183	6.3	73	31	256		
Jun-11	20.9	8.20	1,250		-	192	1.79	232	1.57	ND	88	174	6.2	67	34	250	729	0.54
Jul-11	20.8	7.80	1,214		-	192	0.75	219	1.64	ND	84	171	6.2	72	34	256	715	1.22
Aug-11	21.5	7.87	1,246		-	192	0.63	221	1.66	ND	85	162	6.0	66	29	254	692	0.38
Sep-11	NT	7.50	1,502		-	188	0.65	223	1.68	ND	87	165	6.2	68	30	-	714	0.29
Oct-11	19.2	8.00	1,228		-	188	0.64	218	1.64	ND	85	157	6.0	64	28	248	713	0.97
Nov-11	?	7.80	1,153		-	188	0.64	200	1.55	ND	78	147	5.8	63	27	244	676	0.50
Dec-11	19.3	7.90	1,188		-	188	0.70	208	1.57	ND	82	166	6.0	87	31	248	681	0.34
Jan-12	20.2	7.80	1,460		-	190	0.83	287	1.43	ND	107	222	7.0	89	36	274	862	0.22
Feb-12	18.8	7.93	1,192		-	188	0.76	212	1.55	ND	86	156	5.8	74	28	252	677	0.25
Mar-12	18.9	7.86	1,129		-	188	0.83	186	1.60	ND	79	139	6.4	72	27	242	649	0.47
Apr-12	20.2	7.90	1,127		-	188	0.92	191	1.68	NA	81	244	5.9	71	27	248	658	0.98
May-12	19.4	7.80	1,136		-	188	0.82	191	1.65	ND	81	246	5.4	79	31	248	653	0.18
Jun-12	20.9	7.73	1,123		-	188	0.60	185	1.50	ND	79	138	5.5	75	28	244	673	0.25
Jul-12	20.9	8.01	1,086		-	186	0.77	178	1.70	ND	76	134	6.3	63	25	248	638	0.51
Aug-12	20.9	7.85	1,172		-	184	0.60	198	1.60	ND	82	174	6.6	148	23	256	676	0.40
Sep-12	20.4	7.65	1,173		-	184	0.66	197	1.52	ND	82	164	6.4	144	22	256	674	0.32
Oct-12	20.2	8.50	1,198		-	184		213	1.56	ND	88	162	6.3	129	22	260	682	0.25
Nov-12	20.1	7.54	1,439		-	190	0.82	280	1.44	ND	104	200	6.5	91	35	284	872	0.30
Dec-12	19.3	7.75	1,247		-	188	0.82	227	1.62	ND	90	162	6.0	74	31	260	713	0.29
Jan-13	19.4	7.48	1,260		-	184	0.85	233	1.80	ND	88	171	6.5	77	32	252	704	0.32
Feb-13	19.4	7.74	1,255		-	184	0.78	242	1.66	ND	92	179	6.5	79	32	260	727	0.38
Mar-13	18.5	7.51	1,259		-	184	0.74	235	1.59	ND	87	163	6.3	91	31	262	684	0.19
Apr-13	19.2	7.30	1,163		-	180	0.72	192	1.55	ND	111	142	5.8	88	29	252	677	0.18
May-13	18.2	7.90	1,017		-	184	0.79	171	1.68	ND	72	129	5.6	92	29	240	589	0.29
Jun-13	20.5	7.29	1,111		-	184	0.77	194	1.61	ND	78	143	5.5	65	29	248	633	0.22
Jul-13	20.6	7.69	1,126		-	184	0.84	193	1.55	ND	77	137	5.8	65	30	252	689	0.15
Aug-13	20.7	7.84	1,143		-	184	0.71	198	1.59	ND	77	140	5.7	69	30	244		0.16
Sep-13	20.0	7.67	962		-	180	0.68	151	1.66	ND	67	121	6.2	69	31	236	594	0.27
Oct-13	19.0	7.70	1,042		-	186	NT	183	1.58	ND	77	126	5.7	73	28	244	610	0.21
Nov-13	19.5	7.85	1,181		-	184	0.80	213	1.53	ND	85	155	6.1	55	31	258	651	0.15
Dec-13	19.1	7.55	1,172		-	184	0.04	218	1.16	ND	85	156	6.4	64	32	244	675	0.24
Jan-14	19.0	7.66	1,175		-	182	0.76	212	1.59	ND	85	155	6.6	76	32	256	715	0.19
Feb-14	19.2	7.75	1,352		-	184	1.12	258	1.57	ND	107	180	6.5	67	33	270	766	0.34
Mar-14	19.0	7.83	1,394		-	202	0.85	265	1.48	ND	103	204	6.9	73	24	268	778	0.19
Apr-14																		
May-14	20.5	7.74	1,096		-	180	0.78	189	1.59	ND	77	150	6.4	74	33	246	638	0.24
Jun-14	20.4	8.00	1,175		-	184	0.85	197	1.53	ND	79	155	6.6	77	34	252	659	0.83
7/1/14	NT	7.60	996		-	182	0.76	144	1.54	ND	66	122	6.1	71	32	230	564	0.40
8/1/14	21.9	7.66	1,000		-	178	0.74	182	1.66	ND	75	139	6.4	76	30	240	608	NT
9/1/14	19.8	7.48	1,053		-	180	0.74	174	1.47	ND	71	134	2.0	66	35	240	629	0.18
10/1/14	20.4	7.52	1,182		-	184	0.83	230	1.57	ND	87					256	688	0.19
11/1/14	20.1	7.72	1,052		-	176	0.75	178	1.50	ND	70	116	5.3	167	39	236	596	0.35
12/1/14	19.1	7.58	1,211		-	184	0.82	224	1.61	ND	86	128	7.8			254	675	0.18
1/1/15	20.3	7.72	1,180		-	180	0.71	207	1.58	ND	120	155	6.3	66	31	248	659	0.23
2/1/15	18.9	7.48	1,084		-	176	0.79	181	1.65	ND	76	150	7.1	71	30	240	604	0.20
3/1/15	19.0	7.52	1,157		-	192	1.08	210	1.45	ND	88	141	8.0	73	38	250	655	0.27
4/1/15	19.5	7.95	1,052		-	188	0.79	167	ND	ND	71	119	6.2	71	23	280	634	0.46
5/1/15	20.4	7.82	1,274		-	192	0.84	222	-	ND	90	170	6.8	83	33	256	722	0.37
6/1/15	19.9	7.94	1,130		-	192	0.94	191	1.60	ND	79	146	6.5	84	30	242	647	0.62
7/1/15	21.3	7.99	1,089		-	192	0.85	178	1.52	ND	75	140	6.6	78	30	240	636	0.32
8/1/15	20.6	7.65	1,103		-	192	0.85	184	1.54	ND	76	139	6.3	90	-	242	658	0.72
9/1/15	20.3	7.51	1,091		-	190	0.82	172	1.63	ND	72	72	131.0	6	-	240	624	0.38
10/1/15	20.1		1,189		-	190	0.94	216	1.62	ND	85	157	6.6	78	33	250	697	0.28
11/1/15	19.7	7.85	1,131		-	188	0.86	193	1.51	ND	79	148	7.5	91	-	252	668	1.30
12/1/15	18.8	8.02	1,104		-	192	0.83	183	1.51	ND	76	140	6.6	94	34	244	642	0.24
1/1/16	18.8	8.00	1,031		-	188	0.81	160	0.17	ND		133	6.3	88	33	276	642	0.41
4/1/16	19.6	7.97	979				0.86	154	1.65	ND	67						595	0.44
6/1/16	20.5	7.93	960		-	192		155		ND		114	6.0	91	31	224	946	0.55
7/1/16	20.6	7.79	1,036		-	192	0.81	162	1.68	ND	72	126	6.2	93	32	236	859	0.46
8/1/16	20.8	7.93	1,053		-	190	1.04	165	1.66	ND	73	129	6.3	92	32	236	588	0.24
9/1/16	19.8	7.90	1,076		-	192	0.81	173	1.72	ND	73	135	6.3	95	32	240	627	0.61
10/1/16	19.5	7.81	1,045		-	188	0.69	169	1.50	ND	63	129	6.2	91	32	236	640	0.27
11/1/16	NT	NT			-	188	0.74	161	1.72	ND	68	126	5.9	93	32	236	665	0.19
12/1/16	19.2	7.79	1,104		-	190	0.74	177	2.03	ND	75	138	5.6	55	26	234	698	0.42
1/1/17	19.4	7.82	1,045		-	192	0.77	187	1.58	ND	77	140	5.8					

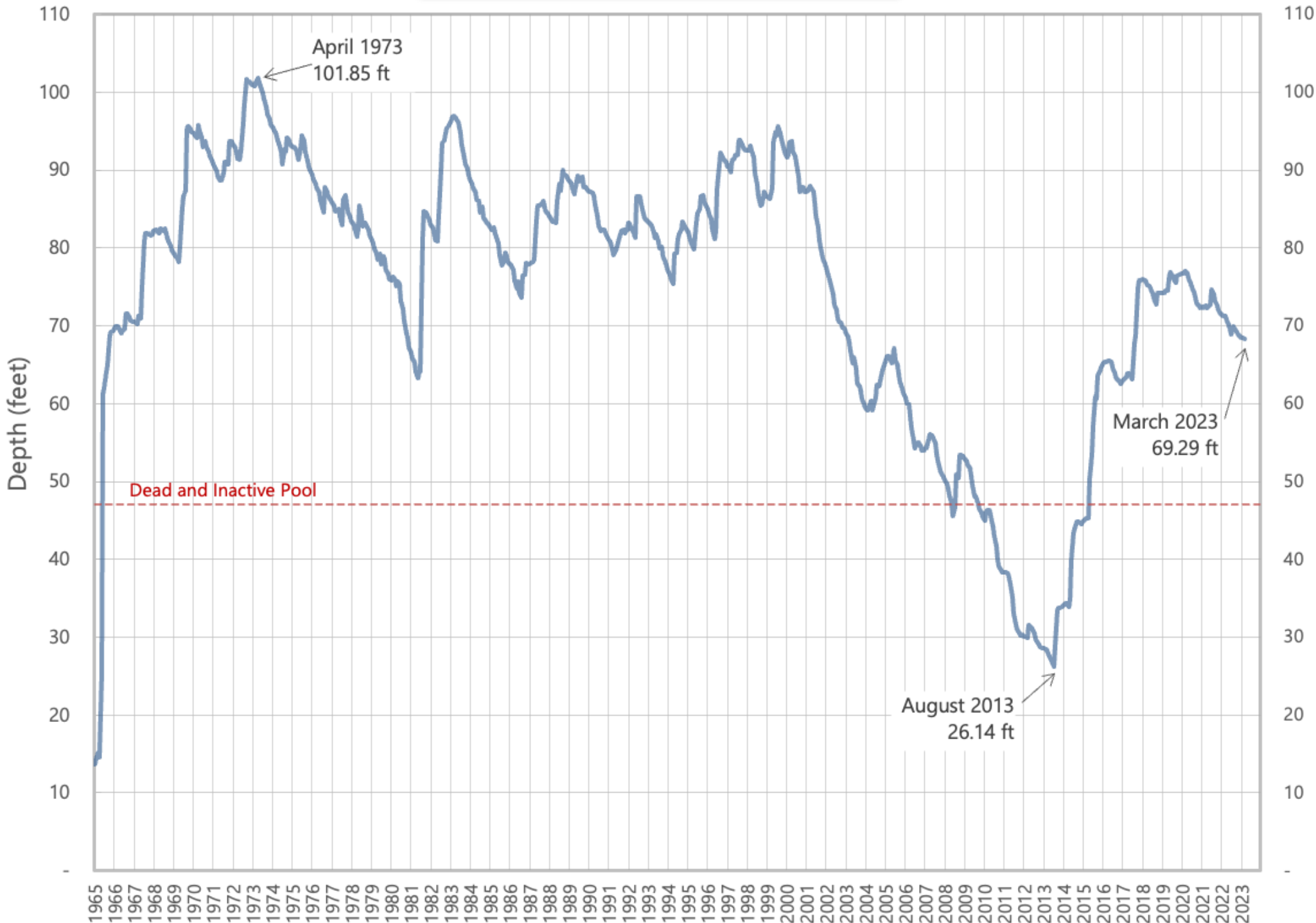
JOHN C WILLIAMS - Wells

	Temp (C)	Ph	Specific Conductance	Dissolved Oxygen	P. Alkalinity	T. Alkalinity	Fluoride	Chloride (IC)	Nitrate	Phosphate	Sulfate	Sodium	Potassium	Calcium	Magnesium	Hardness	TDS	Turbidity
5/1/17	19.0	7.86	1,061		-	188	0.76	177	1.67	ND	73	135	5.6	58	27	238	634	0.20
6/1/17	20.5	7.64	942		-	184	0.69	174	1.62	ND	73	137	5.8	53	27	238	631	0.30
7/1/17	20.0	7.66	1,042		-	188	0.74	161	1.63	ND	71	127	5.6	59	27	232	589	0.50
8/1/17	20.0	7.76	996		-	188	0.85	148	ND	ND	71	119	5.7	53	27	232	569	0.50
9/1/17	20.9	7.77	1,006		-	188	0.80	148	2.70	ND	71	124	5.8	58	27	220	594	0.50
10/1/17	19.9	7.72	1,026		-	184	0.77	155	2.64	ND	70	121	5.6	55	27	232	489	0.50
11/1/17	19.5	7.74	966		-	188	0.81	194	-	ND	79	142	5.6	56	ND	252	733	0.70
12/1/17	19.0	7.76	1,044		-	184	0.75	170	1.48	ND	73	130	5.7	50	-	242	745	0.40
1/1/18	18.9	7.68	1,146		-	188	0.76	189	1.38	ND	77	147	6.1	44	-	236	650	0.40
2/1/18	19.0	7.79	1,159		-	184	0.76	191	1.41	ND	79	149	5.6	58	28	240	676	0.20
3/1/18	19.6	7.86	997		-	192	0.76	147	1.48	N/D	67	118	5.5	55	27	226	632	0.40
4/1/18	19.4	9.02	1,014		-	194	0.90	152	1.46	N/D	67	NT	NT	NT	NT	272	564	0.30
5/1/18	20.4	7.65	1,002		-	200	0.74	148	1.44	N/D	68	119	5.5	48	26	232	571	0.50
6/1/18	21.4	7.69	1,005		-	192	0.76	150	1.40	N/D	66	118	5.6	57	26	234	574	0.60
7/1/18	20.5	7.57	867		-	192	0.68	135	1.47	N/D	63	109	5.3	56	-	224	492	0.12
8/1/18	20.6	7.17	852		-	192	0.75	153	1.56	N/D	66	119	5.4	-	-	226	563	0.40
9/1/18	19.8	7.94	890		-	188	0.78	120	1.52	N/D	58	98	5.3	47	26	216	513	0.23
10/1/18	19.5	8.13	915		-	186	0.74	125	1.52	N/D	60					216	532	0.21
11/1/18	19.2	7.83	1,008		-	196	0.87	149	1.01	N/D	67	120	5.7	58	26	230	564	0.90
12/1/18	17.3	7.80	1,198		-	196	0.80	197	1.32	N/D	80	154	6.4	59	30	252	669	0.25
1/1/19	18.4	7.65	1,045		-	192	0.67	162	1.42	ND	70	125	5.8	54	29	240	589	0.21
2/1/19	18.3	7.81	902		-	184	0.66	125	1.47	N/D	62	100	5.4	51	26	220	527	0.22
3/1/19	18.6	7.64	1,140		-	192	0.76	184	1.42	N/D	74	132	6.7	70	28	236	652	0.51
4/1/19	NT	7.09	940		-	194	0.67	134	1.44	N/D	62	102	5.5	57	26	228	593	0.78
5/1/19	19.6	7.25	941		-	192	0.66	139	1.47	N/D	63	103	5.7	60	27	232	513	0.30
6/1/19	19.8	7.76	744		-	188		122		N/D							482	0.30
7/1/19	20.1	7.80	1,037		-	188	0.66	163	1.49	N/D	69	119	5.6	58	27	232	577	0.20
8/1/19	21.1	7.37	911		-	190	0.86	135	1.48	N/D	62	102	5.4	56	23	220	565	0.40
9/1/19	20.2	7.54	925		-	188	0.81	138	2.65	N/D	63	103	4.6	54	26	220	545	0.30
10/1/19	18.8	7.22	950		-	188	0.84	144	1.40	N/D	60	108	5.7	43	27	230	626	0.20
11/1/19		8.02	911		-	188	0.73	128	1.52	N/D	59	96	5.5	59	26	224	493	0.60
12/1/19	17.0	7.62	883		-	188	0.82	127	-	ND	58	96	6.1	56	26	228	507	0.30
1/1/20	18.5	7.76	908		-	192	0.51	134	1.14	N/D	65	103	5.9	60	27	224	541	0.80
2/1/20	17.9	7.80	968		-	192	0.54	145	1.36	N/D	65	97	6.6	60	28	234	574	0.30
3/1/20	18.2	7.78	935		-	196	0.67	132	1.34	N/D	63	92	6.2	60	27	232	533	0.13
4/1/20	19.9	7.80	980		-	194	0.77	151	1.56	N/D	70	118	6.8	70	28	232	540	0.43
5/1/20	20.4	7.90	923		-	190	0.62	124	1.49	N/D	61	97	5.6	72	26	228	583	0.40
6/1/20	20.5	7.76	876		-	188	0.69	118	1.69	N/D	59	94	5.7	72	17	224	505	0.55
7/1/20	20.4	7.77	956		-	192	0.75	138	1.65	N/D	63	106	5.7	74	26	232	550	0.33
8/1/20	21.1	7.84	916		-	184	0.68	135	1.70	N/D	64	104	5.5	60	27	224	510	0.56
9/1/20	19.9	7.78	869		-	188	0.69	150	1.70	N/D	68	110	-	61	27	232	550	0.32
10/1/20																		
11/1/20																		
12/1/20	19.9	7.87	1,082		-	192	0.83	209	1.59	N/D	86	149	6.1	70	30	260	650	0.51
1/1/21	19.6	7.80	1,115		-	192	0.82	172	1.64	N/D	72	126	5.7	78	9	244	595	0.27
2/1/21	19.4	7.77	1,221		-	192	0.75	206	1.58	N/D	81	149	5.9	66	30	248	638	0.28
3/1/21	18.3	7.70	1,061		-	192	0.77	164	1.67	N/D	66	-	-	-	-	240	641	0.43
4/1/21	19.3	7.39	1,009		-	192	0.74	153	1.70	N/D	67	115	5.6	63	29	224	600	0.25
5/1/21	19.2	7.58	926		-	196	0.78	129	1.58	N/D	63	103	-	60	28	224	561	0.23
6/1/21	20.1	7.63	944		-	196	0.65	130	1.59	N/D	63					220	567	0.44
7/1/21	20.7	7.57	882		-	192	0.68	122	1.60	N/D	60	98	5.4	57	27	222	536	0.38
8/1/21	20.6	7.73	906		-	194	0.67	120	1.67	N/D	59	98	6.0			224	568	0.38
9/1/21	19.5	7.68	871		-	192	0.74	120	1.66	N/D	58	95	5.7	64	52	224	481	0.45
10/11/21	19.0	7.75	817		-	188	0.67	107	1.24	N/D	53	84	5.1	61	-	216	466	0.15
11/1/21	19.0	7.68	851		-	188	0.67	117	3.18	N/D	57	90	5.1	61	-	216	495	0.62
12/13/21	18.3	7.54	848		-	190	0.76	116	1.55	N/D	56	94	6.3	58	-	214	477	1.09
1/3/21	18.6	7.70	955		-	192	0.77	137	1.56	N/D	61	109	5.9	60	-	222	536	0.18
2/21/22	19.1	7.66	1,029		-	190	0.76	125	1.61	N/D	63	110	5.6	59	-	218	528	0.17
3/3/22	18.7	7.67	987		-	192	0.65	129	1.64	N/D	64	105	5.4	61	28	224	563	0.26
4/18/22	19.5	7.50	950		-	196	0.68	154	1.71	0.07	69	121	5.6	62		236	590	1.64
5/16/22	20.8	7.72	965		-	196	0.74	145	1.68	N/D	68	117	5.8	-	-	228	554	0.73
6/6/22	20.3	7.76	970		-	196	0.80	147	1.63	N/D	68	119	5.7	65	28	224	576	0.54
7/5/22	20.9	7.72	1,052		-	192	0.73	165	1.65	N/D	72	129	5.9		-	230	637	0.33
8/8/22	21.4	7.40	976		-	192	0.77	156	1.76	N/D	69	124	6.0	67	-	236	573	0.32
10/3/22	14.6	7.14	829	9.24	-	192	0.75	127	1.64	N/D	60	106	5.3	-	-	220	521	0.19
11/8/22	19.1	7.40	921	8.47	-	192	0.74	134	0.81	N/D	60	108	5.4	60	27	224	518	0.16
12/5/22	19.5	7.79	847	9.00	-	196	0.71	113	1.68	N/D	56	85	5.5	62	26	220	479	0.51
1/9/23	19.3	7.93	878	8.37	-	190	0.78	133	1.68	N/D	61	82	5.3	60	-	228	503	0.43
2/13/23	19.2	8.00	926	9.00	-	192	0.70	137	1.67	N/D	63	106	5.6	65	28	228	550	0.21
3/7/23	20.2	7.93	924	8.37	-	188	0.70	139	1.69	N/D	64	106	7.2	60	-	228	520	0.95
4/17/23	19.7	8.20	894	8.30	-	190	0.80	134	1.64	N/D	62	109	6.4	60		220	502	0.35
Average	19.6	7.71	1,025	8.68	-	188	0.77	164	1.60	0.25	72	129	6.9	68	29	237	602	0.41
Std. Dev.	1.0	0.27	169	0.39	-	5	0.16	45	0.28	0.32	14	34	10.7	21	5	16	100	0.25
Max	21.9	9.02	1,502	9.24	-	202	1.79	287	3.18	0.72	120	246	131.0	167	52	284	946	1.64
Min	14.6	7.00	621	8.30	-	176	0.04	63	0.17	0.07	41	50	2.0	6	9	200	366	0.10

CRMWA Member Cities - Historical Usage



Lake Meredith - Historical Depth



Lake Meredith - Chloride Levels

