

Doug Cline
University of Arizona-College of Science
P.O. Box 8746
Tucson, AZ 85738

Project: Drinking Water
Project Number: P-102464

Reported:
04/15/25 08:59

Analyte

Biosphere Well (Greenhouse) (25C2187-01) Drinking Water (Grab) Sampled: 03/18/25 05:40 Received: 03/18/25 07:59

Analyte	Result	MCL	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Legend Technical Services of Arizona, Inc.

Total Metals

Antimony	<0.0005	0.006	0.0005	mg/L	1	B5C0818	03/21/25	03/21/25	EPA 200.8	
Arsenic	<0.0010	0.0105	0.0010	mg/L	1	B5C0818	03/21/25	03/21/25	EPA 200.8	
Barium	0.026	2	0.010	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Beryllium	<0.0020	0.004	0.0020	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Cadmium	<0.0001	0.005	0.0001	mg/L	1	B5C0818	03/21/25	03/21/25	EPA 200.8	
Calcium	35		1.0	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Chromium	<0.0050	0.1	0.0050	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Copper	<0.010	1.3	0.010	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Lead	<0.0010	0.015	0.0010	mg/L	1	B5C0818	03/21/25	03/21/25	EPA 200.8	
Magnesium	8.5		1.0	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Mercury	<0.0002	0.0016	0.0002	mg/L	1	B5C0800	03/21/25	03/21/25	EPA 245.1	
Nickel	<0.020		0.020	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Selenium	<0.0020	0.05	0.0020	mg/L	1	B5C0818	03/21/25	03/21/25	EPA 200.8	
Sodium	16		1.0	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Calcium Hardness as CaCO ₃	88		2.5	mg/L	1	[CALC]	03/21/25	03/21/25	200.7	
Magnesium Hardness as CaCO ₃	35		4.1	mg/L	1	[CALC]	03/21/25	03/21/25	200.7	
Total Hardness as CaCO ₃	120		4.1	mg/L	1	[CALC]	03/21/25	03/21/25	200.7	

Inorganic Chemistry

Total Alkalinity as CaCO ₃	126		10	mg/L	1	B5C0827	03/21/25	03/21/25	SM 2320 B	
Nitrate as N	0.41	10.5	0.25	mg/L	1	B5C0704	03/19/25	03/19/25	EPA 300.0	
Nitrite as N	<0.25	1	0.25	mg/L	1	B5C0704	03/19/25	03/19/25	EPA 300.0	
pH	8.0			pH Units	1	B5C0866	03/24/25	03/24/25	SM 4500H B	H5
Temperature	15.1			°C	1	B5C0866	03/24/25	03/24/25	pH Temperature	H5
Total Dissolved Solids	167	500	10	mg/L	1	B5C0767	03/19/25	03/19/25	SM 2540 C	

Biosphere Well (Greenhouse) (25C2187-01) Drinking Water (Grab) Sampled: 03/18/25 05:40 Received: 03/18/25 07:59

Analyte	Result	MCL	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Legend Technical Services of Arizona, Inc.

Miscellaneous

Langlier Index	0.0120		-5.00	N/A	1	B5C1032	03/27/25	03/27/25	Miscellaneous	
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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sample Condition Upon Receipt:

Temperature: 1.60 °C

All samples were received in acceptable condition unless noted otherwise in the case narrative.

Case Narrative:

Holding Times: All holding times were met unless otherwise qualified.

QA/QC Criteria: All analyses met method requirements unless otherwise qualified.

Certifications: **AZ(PHX)0004, AZ(TUC)0004, CDC ELITE Member.**

Accreditation is applicable only to the test methods specified on each scope of accreditation held by LEGEND.

Definitions: **MCL**= Maximum Contaminant Level is the maximum level of a particular contaminant recommended by the EPA. If your result is less than (<) this limit, the sample is within the acceptable limits allowed for drinking water. Please note that some MCLs, such as pH, Total Dissolved Solids, etc. are aesthetic-based and not health based limits. For a full list of EPA guidelines, visit:

<https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>

RL= Reporting Limit is the lowest level of that analyte that can be accurately detected by the methodology and instrumentation.

Please see additional documentation provided for further instructions on reading your analytical report.

Comments: There were no problems encountered during the processing of the samples, unless otherwise noted.
All samples were analyzed on a "wet" basis unless designated as "dry weight".

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Quality Control Notes

H5 This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

PM: Mary Whaley

CHAIN OF CUSTODY RECORD

LEGEND 
Technical Services, Inc.

☐ 17631 N. 25th Avenue • Phoenix, AZ 85023 • (602) 324-6100 • Fax (602) 324-6101
☒ 4585 S. Palo Verde Rd, Ste 423 • Tucson, AZ 85714 • (520) 327-1234 • Fax (520) 327-0518

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UNIVERSITY OF ARIZONA		Report Mailing Address		City		State		Zip		Phone		Email Address																	
BIOSPHERE 2		PO BOX 8746		TUCSON		AZ		85738		621-0240		dcline@ARIZONA.EDU																	
Public Water System Number		Contact Name		Purchase Order No.		Email Results		Special Detection Limits		EDD																			
P-102464		D. CLINE				<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>																			
IOC OPTIONS		REQUESTED ANALYSES																											
IOC's I: Sb, As, Ba, Be, Cd, Cr, Hg, Ni, Se, Na, Ti, CN, F																													
IOC's II (New Source): Sb, As, Ba, Be, Ca, Cd, Cr, Cu, Pb, Hg, Mg, Ni, Se, Na, Ti, Ca Hardness, Total Hardness, Alk, Asbestos, CN, F, Langelier, NO ₂ , NO ₃ , pH, SO ₄ , TDS, Temp (in field)																													
Client's Sample Identification		Sample Date	Sample Time	EPDS # / DWR # / Collection Site ID*	Compliance	No. of Containers	pH	Total Coliform/E. coli	IOCs (see left)	IOCs II (see left)	Lead & Copper	Nitrate, Nitrite	Radiochemicals**	524 (TTHM)*	557 (HAA)*	524 (VOCs)	504 (EDB/DBCP)	505 (Pesticides & PCB)	515 (Chlorinated Herbicides/Acids)	525 (Pesticides)	531 (Carbamates)	547 (Glyphosate)	548 (Endothall)	549 (Diquat)	1613 (Dioxin)	Perchlorate	Bromate	Chlorite	LAB NO.
BIOSPHERE Well		3/18/25	0540	GREENHOUSE No	4	✓			2		2																		01
TO ENSURE COMPLETION OF ANALYSIS, SAMPLES MUST BE RECEIVED AT LEAST 6 HOURS PRIOR TO THE HOLD TIME EXPIRATION																													
Comments: *For Disinfection Byproducts Monitoring, the Collection Site ID is required for each sample location.																													
Radiochemical analysis: Gross Alpha, Radium 226, Radium 228																													
<input type="checkbox"/> Yes, I have followed the instructions provided by the laboratory for dechlorination of my samples.																													
TURN AROUND TIME																													
<input checked="" type="checkbox"/> Standard 7-10 day																													
<input type="checkbox"/> Other, Laboratory Authorization Required for Rush																													
SAMPLE CONDITION UPON RECEIPT																													
No. of Containers 4																													
Temperature 1-6 °C																													
Custody Seals Y N																													
Seals Intact Y N																													
Preserved Y N																													
RELINQUISHED BY																													
① Sampler Signature [Signature] Date 3/18/25																													
Sampler Printed Name DOUG CLINE Time 0759																													
③ Sampler Signature [Signature] Date 3/18/25																													
Sampler Printed Name CSOS Time 1700																													
⑤ Sampler Signature [Signature] Date [Signature]																													
Sampler Printed Name [Signature] Time [Signature]																													
SAMPLES RECEIVED BY																													
Signature [Signature] Date 3/18/25																													
Printed Name CSOS Time 0759																													
Signature [Signature] Date 3/18/25																													
Printed Name Courier Time 1700																													
Signature [Signature] Date 3/19/25																													
Printed Name T. Nicolino																													
Page 4 of 4																													

Doug Cline
University of Arizona-College of Science
P.O. Box 8746
Tucson, AZ 85738

Project: Drinking Water
Project Number: P-102464

Reported:
04/15/25 08:32

Analyte

Biosphere RO (RO Unit) (25C2186-01) Drinking Water (Grab) Sampled: 03/18/25 05:30 Received: 03/18/25 07:59

Analyte	Result	MCL	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Legend Technical Services of Arizona, Inc.

Total Metals

Antimony	<0.0005	0.006	0.0005	mg/L	1	B5C0816	03/21/25	03/21/25	EPA 200.8	
Arsenic	<0.0010	0.0105	0.0010	mg/L	1	B5C0816	03/21/25	03/21/25	EPA 200.8	
Barium	<0.010	2	0.010	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Beryllium	<0.0020	0.004	0.0020	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Cadmium	<0.0001	0.005	0.0001	mg/L	1	B5C0816	03/21/25	03/21/25	EPA 200.8	
Calcium	<1.0		1.0	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Chromium	<0.0050	0.1	0.0050	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Copper	<0.010	1.3	0.010	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Lead	<0.0010	0.015	0.0010	mg/L	1	B5C0816	03/21/25	03/21/25	EPA 200.8	
Magnesium	<1.0		1.0	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Mercury	<0.0002	0.0016	0.0002	mg/L	1	B5C0800	03/21/25	03/21/25	EPA 245.1	
Nickel	<0.020		0.020	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Selenium	<0.0020	0.05	0.0020	mg/L	1	B5C0816	03/21/25	03/21/25	EPA 200.8	
Sodium	1.2		1.0	mg/L	1	B5C0850	03/21/25	03/21/25	EPA 200.7	
Calcium Hardness as CaCO ₃	<2.5		2.5	mg/L	1	[CALC]	03/21/25	03/21/25	200.7	
Magnesium Hardness as CaCO ₃	<4.1		4.1	mg/L	1	[CALC]	03/21/25	03/21/25	200.7	
Total Hardness as CaCO ₃	<4.1		4.1	mg/L	1	[CALC]	03/21/25	03/21/25	200.7	

Inorganic Chemistry

Total Alkalinity as CaCO ₃	<10		10	mg/L	1	B5C0827	03/21/25	03/21/25	SM 2320 B	
Nitrate as N	<0.25	10.5	0.25	mg/L	1	B5C0704	03/19/25	03/19/25	EPA 300.0	
Nitrite as N	<0.25	1	0.25	mg/L	1	B5C0704	03/19/25	03/19/25	EPA 300.0	
pH	5.7			pH Units	1	B5C0866	03/24/25	03/24/25	SM 4500H B	H5
Temperature	15.9			°C	1	B5C0866	03/24/25	03/24/25	pH Temperature	H5
Total Dissolved Solids	<10	500	10	mg/L	1	B5C0767	03/19/25	03/19/25	SM 2540 C	Q8

Biosphere RO (RO Unit) (25C2186-01) Drinking Water (Grab) Sampled: 03/18/25 05:30 Received: 03/18/25 07:59

Analyte	Result	MCL	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Legend Technical Services of Arizona, Inc.

Miscellaneous

Langlier Index	<-5.00		-5.00	N/A	1	B5C1032	03/27/25	03/27/25	Miscellaneous	
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Sample Condition Upon Receipt:

Temperature: 1.60 °C

All samples were received in acceptable condition unless noted otherwise in the case narrative.

Case Narrative:

Holding Times: All holding times were met unless otherwise qualified.

QA/QC Criteria: All analyses met method requirements unless otherwise qualified.

Certifications: **AZ(PHX)0004, AZ(TUC)0004, CDC ELITE Member.**

Accreditation is applicable only to the test methods specified on each scope of accreditation held by LEGEND.

Definitions: **MCL**= Maximum Contaminant Level is the maximum level of a particular contaminant recommended by the EPA. If your result is less than (<) this limit, the sample is within the acceptable limits allowed for drinking water. Please note that some MCLs, such as pH, Total Dissolved Solids, etc. are aesthetic-based and not health based limits. For a full list of EPA guidelines, visit:

<https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>

RL= Reporting Limit is the lowest level of that analyte that can be accurately detected by the methodology and instrumentation.

Please see additional documentation provided for further instructions on reading your analytical report.

Comments: There were no problems encountered during the processing of the samples, unless otherwise noted.
All samples were analyzed on a "wet" basis unless designated as "dry weight".

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- d. Except as may otherwise be provided in an attached Proposal or in any Amendment, Client's rights to any report issued by LEGEND shall be limited to Client's use of the report in its entirety for Client's own purposes. Client may make copies of the entire report available to third parties, subject to this Agreement's disclaimer of any third-party beneficiaries. Use or disclosure of less than the entire report shall be deemed a violation of Client's contract with LEGEND.
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- f. The report and any related documents shall not be used for any marketing or advertising purposes without the express prior written consent and approval of LEGEND.

Quality Control Notes

- Q8 Insufficient sample received to meet method QC requirements. Batch QC requirements satisfy ADEQ policy 0154.000.
- H5 This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

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PM: Mary Whaley

CHAIN OF CUSTODY RECORD

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☒ 4585 S. Palo Verde Rd, Ste 423 • Tucson, AZ 85714 • (520) 327-1234 • Fax (520) 327-0518

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CL

Client name UNIVERSITY OF ARIZONA		Report Mailing Address PO BOX 8746		City TUCSON		State AZ		Zip 85738		Phone 621-0240		Email Address dcline@ARIZONA.EDU						
System Name BIOSPHERE 2		Public Water System Number P-102464		Contact Name D. CLINE		Purchase Order No.		Email Results <input type="checkbox"/> Special Detection Limits <input type="checkbox"/> EDD <input type="checkbox"/>										
IOC OPTIONS				REQUESTED ANALYSES										LAB NO.				
IOC's I: Sb, As, Ba, Be, Cd, Cr, Hg, Ni, Se, Na, Ti, CN, F IOC's II (New Source): Sb, As, Ba, Be, Ca, Cd, Cr, Cu, Pb, Hg, Mg, Ni, Se, Na, Ti, Ca Hardness, Total Hardness, Alk, Asbestos, CN, F, Langelier, NO ₂ , NO ₃ , pH, SO ₄ , TDS, Temp (in field)				Total Coliform/E. coli IOC's (see left) IOC's II (see left) Lead & Copper Nitrate, Nitrite Radiochemicals** 524 (TTHM)* 557 (HAA)* 524 (VOCs) 504 (EDB/DBCP) 505 (Pesticides & PCB) 515 (Chlorinated Herbicides/Acids) 525 (Pesticides) 531 (Carbamates) 547 (Glyphosate) 548 (Endothall) 549 (Diquat) 1613 (Dioxin) SOCs Perchlorate Bromate Chlorite														
Client's Sample Identification		Sample Date	Sample Time	EPDS # / DWR # / Collection Site ID*	Compliance	No. of Containers	pH <input checked="" type="checkbox"/> (Legend Use)											LAB NO.
BIOSPHERE RO		3/18/25	0530	RO unit	NO 4		<input checked="" type="checkbox"/>											
TO ENSURE COMPLETION OF ANALYSIS, SAMPLES MUST BE RECEIVED AT LEAST 6 HOURS PRIOR TO THE HOLD TIME EXPIRATION																		
Comments: *For Disinfection Byproducts Monitoring, the Collection Site ID is required for each sample location.												TURN AROUND TIME						
Radiochemical analysis: Gross Alpha, Radium 226, Radium 228												<input checked="" type="checkbox"/> Standard 7-10 day <input type="checkbox"/> Other Laboratory Authorization Required for Rush						
<input type="checkbox"/> Yes, I have followed the instructions provided by the laboratory for dechlorination of my samples.																		
SAMPLE CONDITION UPON RECEIPT					RELINQUISHED BY					SAMPLES RECEIVED BY								
No. of Containers	4				① Sampler Signature	Date 3/18/25				Signature	Date 3/18/25							
Temperature	1.6 °C				Sampler Printed Name	DOUG CLINE				Printed Name	T. Sees							
Custody Seals	Y <input checked="" type="checkbox"/>				③ Sampler Signature	Date 3/18/25				Signature	Date 3/18/25							
Seals Intact	Y <input checked="" type="checkbox"/>				Sampler Printed Name	CSOS				Printed Name	Covian							
Preserved	Y <input checked="" type="checkbox"/>				⑤ Sampler Signature	Date				Signature	Date 3/18/25							
					Sampler Printed Name	Time				Printed Name	Carrier / T. Nicolaidis							
White - Lab FORM CS-019					Yellow - Client					Page 4 of 4								