



**CENTRAL ARIZONA PROJECT  
Water Quality Standards Task Force  
January 17, 2019 - 12:30 PM**

**Central Arizona Project  
23636 N. 7th Street  
Phoenix, Arizona  
Board Room**

**FINAL AGENDA**

Times shown are approximate. Some items may take more or less time than scheduled, or the President may grant requests to hear items in an order other than shown.

1. Consideration of Action to Approve the May 1, 2018 Minutes of the Water Quality Standards Task Force - Arboleda/Goddard
2. Review of the Approved June 7, 2018 Consensus Proposal for Water Quality Standards - Seasholes
3. Discussion and Possible Consideration of Action on Delivery and Introduction Standards for a Broad Suite of Water Quality Constituents - Dent
4. Next Steps
5. Public Comment
6. Adjourn



**CENTRAL ARIZONA WATER CONSERVATION DISTRICT  
Meeting of the Water Quality Standards Task Force  
May 10, 2018**

A meeting of the Water Quality Standards Task Force ("Committee") of the Central Arizona Water Conservation District's ("CAP" or "CAWCD") Board of Directors was called to order by co-Chairs Alexandra Arboleda and Terry Goddard on May 10, 2018, at 10:08 a.m. The meeting was held at the Central Arizona Project, 23636 North Seventh Street, Phoenix, Arizona, in the Board Room.

Task Force members present were Co-Chair Alexandra Arboleda, Maricopa County, Co-Chair Terry Goddard, Maricopa County; Ben Graff, Maricopa County; and Jim Hartdegen, Pinal County).

There were approximately 20 members of the public in attendance.

Staff Members present were Bridget Schwartz-Manock, Director of Public Affairs; Suzanne Ticknor, Director of Water Policy, Ken Seasholes, Manager Resource Planning and Analysis, Bonnie Stone, Director of Employee Services, Jay Johnson, General Counsel and Leslie Olsen, Executive Secretary.

The meeting was called to order at 10:08 a.m.

**APPROVAL OF MINUTES OF**

**By unanimous consent, the Committee approved the Minutes of the February 8, 2018, Committee Meeting.**

**Approved**  
Minutes of the  
February 8,  
2018 meeting

**DISCUSSION AND POSSIBLE CONSIDERATION OF ACTION TO APPROVE CONSENSUS PROPOSAL FOR WATER QUALITY STANDARDS**

Ms. Ticknor acknowledged that recently a set of stakeholders and CAP staff were able to reach agreement on a consensus proposal for water quality standards. She also wanted to express her respect and gratitude to the stakeholder group for their perseverance and collaboration in working to find solutions that enjoys consensus support.

Mr. Seasholes presented the CAP Staff Recommendation for Water Quality Standards. He highlighted that CAP customers and stakeholders place great value on the high quality of the current project water supply and that message came through in this process. The quality of the water at the turnout became fundamental in the stakeholder's proposal yet the proposal allows for some system flexibility. Ken reviewed the differences between the consensus and staff proposal. Modifications made included the water quality standards be reviewed every five years and a more robust water quality monitoring and data collection and analysis on the part of CAP. Two operational limits (Nitrate and TDS) were changed and it was agreed that groundwater project supplies should be allowed a startup phase in order to allow for stabilization of the water quality. The CAP staff supports the modifications of the consensus proposal and acknowledged that additional collaborative work will be necessary to finalize the proposal by developing numeric criteria for the remaining constituents.

**PUBLIC COMMENT**

Mr. Brian Biesmeyer, City of Scottsdale expressed appreciation for the process and readiness to move forward with the next process of the Water Quality Standards.

Mr. Peter Mock, Gila River Indian Community, also expressed his appreciation for the work accomplished and fully supported this consensus proposal.

Ms. Melony Lawyer, Tucson Water, thanked all the participants and looks forward to the next process for the program.

Mr. Warren Tenney, Arizona Municipal Water Users Association, stated that it was a long process but

appreciated the support received from the Task Force. Warren expressed appreciation for all the participants: Apache Junction, Avondale, Chandler, Gilbert, Glendale, Goodyear, Mesa, Oro Valley, Peoria, Phoenix, Scottsdale, Tempe, Tucson, Metro Water District, Salt River Project and consultation from the Gila River Indian Community. He explained that the working group continued pushing through the issues and tried to understand each other's needs and appreciated the positive support from the Task Force for this consensus proposal. The group also wanted to make sure that the System Use Agreement works and that non-project water can be used and moved through the canal.

#### **DISCUSSION AND NEXT STEPS**

Ms. Ticknor explained that the City of Scottsdale is anxious to get their project moving but will require the necessary NEPA review of their proposal. The NEPA review cannot proceed until the list of numeric criteria has been established. There is follow on work to be done, additional constituents to be identified in order to complete the program. Upon return to the Task Force, the final package will then proceed to the Board for consideration of approval and afterwards anticipated to move to Reclamation to finalize and approve.

On a motion (Director Arboleda) and second (Director Goddard), the Water Quality Standards Task Force recommended that the board approve the Consensus Proposal for Water Quality Standards. Motion passed unanimously.

#### **ADJOURN**

There being no further business to come before the committee, the meeting adjourned at 11:05 a.m.

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Alexandra Arboleda  
Co-Chair

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Terry Goddard  
Co-Chair



# Review of the Approved June 7, 2018 Consensus Proposal for Water Quality Standards

Water Quality Standards Task Force  
January 17, 2019

Ken Seasholes  
Manager, Resource Planning & Analysis

## Consensus Proposal

- The core element of the Consensus Proposal is the table of “Delivery Standards” developed by the Stakeholder Group last summer, and which has remained unchanged

Priority Constituents	Point of Delivery Standards
Arsenic ug/l	5
Fluoride mg/l	0.7
Nitrate mg/l	1
TDS mg/l	723
TOC mg/l	4
Turbidity NTU	6



## Consensus Proposal

- The Delivery Standards were developed by those most affected by water quality, and they reflect a combination of historic variation of the CAP supply, and the capabilities of surface water treatment processes and soil-aquifer treatment
- The key question has been *how* to stay within those bounds while considering equity, flexibility, certainty, risk, cost, etc.



## A Comprehensive Approach

The Consensus Proposal adopts a multi-faceted approach that includes:

1. Monitoring, Modeling and Data Sharing
2. Project Evaluation and Design
3. Numeric Standards
4. Project Approvals
5. Enforcement



## 1. Monitoring, Modeling and Data Sharing

- Expansion of CAP's current WQ program
- Mandatory Monitoring of Non-Project Supply
  - Costs paid by parties introducing supply

## 2. Project Evaluation and Design

- Mandatory technical review
  - Particular focus on potential operational impacts
- Modeling of WQ blending (see "Delivery Standards")
- Required "inside the fence" sampling point



## 3. Numeric Standards

- Excluded Constituents
  - Limits set at "non-detect" levels
  - Measured at point of introduction
- Delivery Standards—*Quality of comingled water at CAP turnouts*
  - As proposed by Stakeholder Group
  - Highly protective of existing quality
    - Within historic range and/or twice as stringent as the National Drinking Water standards

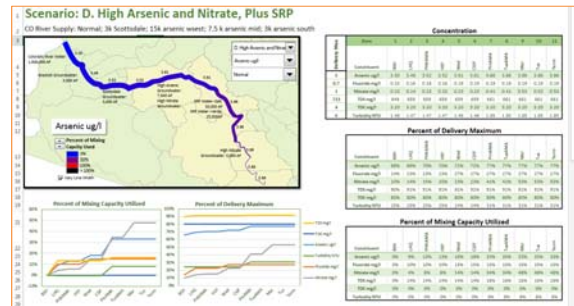
Priority Constituents	Point of Delivery Standards
Arsenic ug/l	5
Fluoride mg/l	0.7
Nitrate mg/l	1
TDS mg/l	723
TOC mg/l	4
Turbidity NTU	6



### 3. Numeric Standards — *continued*

– **Delivery Standards**—*continued*

- Modeled during Project Evaluation phase
- Considers incremental and cumulative effects of projects
- Based on a shortage-reduced CAP supply of 1 MAF
- Helps ensure that high quality will be maintained, but it is not a guarantee of a specific water quality delivered by CAP



### 3. Numeric Standards

## – Introduction Standards

- Quality of the non-Project Water supply at point of introduction
- Standards based on multiple considerations
- Fully enforceable
  - Startup phase for groundwater projects, to allow WQ to stabilize

Priority Constituents	Proposed Standard	units
Arsenic	10	µg/l
Fluoride	4	mg/l
Nitrate	10	mg/l
TDS	1150	mg/l
TOC	6	mg/l
Turbidity	9	NTU

## – Re-evaluation of Standards

- Every 5 years, starting after the first introduction of non-Project Water



## 4. Project Approvals

- Approval by CAWCD and/or Reclamation
- NEPA Compliance

## 5. Enforcement

- Contractual enforcement authority and operational control
- Operating procedures will be established



## Conclusions

- The Consensus Proposal provides a high degree of protection for the Project Water supply, while allowing non-Project Water supplies to be introduced in a cost-effective manner
- Additional collaborative work will be necessary to add detail to the Proposal, and to set numeric standards for a full suite of constituents



YOUR WATER. YOUR FUTURE.



# ACTION BRIEF

## BOARD OF DIRECTORS



### Agenda Number 3.

**CONTACT:** Patrick Dent  
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Ken Seasholes  
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**MEETING DATE:** Thursday, January 17, 2019

**AGENDA ITEM:** Discussion and Possible Consideration of Action on Delivery and Introduction Standards for a Broad Suite of Water Quality Constituents - Dent

**RECOMMENDATION:** Staff recommends that the Water Quality Standards Task Force recommend that the Board of Directors approve the Delivery and Introduction Standards for a Broad Suite of Water Quality Constituents.

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#### **FISCAL IMPLICATIONS:** No

#### **Impact on Budget:**

None

Additional spending authority requested: None

#### **Impact on Reserves:**

None

#### **Impact on Rates:**

None

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#### **LINKAGE TO STRATEGIC PLAN, POLICY, STATUTE OR GUIDING PRINCIPLE:**

CAWCD 2016 Board of Directors Strategic Plan

- Water Supply—Optimize reliability and sustainability of CAP water supply

#### **PREVIOUS BOARD ACTION/ACTIVITY:**

- May 24, 2017 – Water Quality Standards Task Force meeting (“Overview & Context”)
- June 6, 2017 – Water Quality Standards Task Force meeting (“Review of Standards and Operations”)
- September 12, 2017 — Water Quality Standards Task Force meeting (“Stakeholders’ Proposal”)
- February 8, 2018 — Water Quality Standards Task Force meeting (“Process Update and Revised Stakeholder Proposal”)
- May 10, 2018 — Water Quality Standards Task Force meeting (“WQSTF Approval of Consensus Proposal”)
- June 7, 2018 — CAWCD Board Meeting (“Approval of Consensus Proposal”)

#### **ISSUE SUMMARY/DESCRIPTION:**

On May 10, 2018, the Water Quality Standards Task Force recommended that the CAWCD Board approve the Consensus Proposal on Water Quality Standards. The Consensus Proposal outlines a framework for

managing the quality of Non-Project Water that is introduced into the CAP system, including major water quality program elements and numeric criteria for six key constituents. On June 7, 2018, the CAWCD Board unanimously approved the Consensus Proposal.

Since the Board's action in June, CAP staff and stakeholders have worked to develop proposed numeric standards for a broad suite of water quality constituents. Those criteria and associated background are contained in the attached technical memo ("Proposed Numeric Criteria for Broad Suite of Water Quality Constituents").

CAP staff believe that adoption of the expanded list of numeric criteria will successfully complete of the objectives of the Water Quality Standards Task Force. However, staff are committed to a number of follow-on implementation steps, including development of guidance documentation, ongoing engagement with stakeholders, and coordination with the Bureau of Reclamation. As part of that coordination, CAP and Reclamation staff will determine the appropriate form of agreement necessary to satisfy Section 12.1 of the CAP System Use Agreement ("Reclamation and CAWCD shall establish uniform water quality standards for any Non-Project Water introduced into the CAP System"). It is anticipated that that agreement will be brought to the full Board for consideration in 2019.

**SUGGESTED MOTION:**

I move that the Water Quality Standards Task Force Recommend that the Board of Directors approve the Proposed Numeric Criteria for a Broad Suite of Water Quality Constituents.

**ATTACHMENTS:**

1. WQTF Supplemental Numeric criteria 1-17-2019\_kcs
2. Numeric Standards\_for\_Broad\_Suite
3. Consensus\_WQSTF\_Recommendation



# Discussion and Possible Consideration of Action on Delivery and Introduction Standards for a Broad Suite of Water Quality Constituents

Water Quality Standards Task Force  
January 17, 2019

Patrick Dent  
Water Operations Manager

## A Comprehensive Approach

The Consensus Proposal adopts the multi-faceted approach that includes:

1. Monitoring, Modeling and Data Sharing
2. Project Evaluation and Design
-  3. Numeric Standards
4. Project Approvals
5. Enforcement



## Task – Develop Numeric Standards for a Broad Suite of Constituents

- Following the adoption of the Consensus Proposal, additional work was needed to develop Introductory and Delivery Standards for a comprehensive suite of constituents, including:
  - Trace Metals
  - Common Inorganic Compounds
  - Nutrients
  - Pathogens
  - Industrial and Synthetic Compounds



## Water Quality Working Group

- Water Quality Working Group Meetings were coordinated by Warren Tenney and held at AMWUA's offices – Thank you AMWUA for supporting this effort.
- In addition to CAP staff, the working group consisted of technical and water resource staff from CAP Municipalities, SRP and Peter Mock on behalf of the Gila River Indian Community



## Collection and Evaluation of Available Data

- Data sources included
  - CAP Water Quality Program Data
  - Raw water data from the municipalities taken from CAP treatment plants
  - SRP data
  - Groundwater data and statistical analysis of CAP and municipal data provided by Dr. Peter Mock



## Philosophy for Establishing Numeric Criteria

- Standards are targeted to maintain a consistent water quality of delivered water that is within the range of historic CAP water.
- Consideration and review water quality characteristics of potential source waters were considered.



## Methods for Developing Numeric Criteria

- A simple process was followed for establishing the numeric criteria:
  1. Is there sufficient data available to recommend a particular standard
  2. Should the given constituent be prohibited from introduction
  3. Set an appropriate Introductory or Delivery standard



## Developing Numeric Criteria

- If available data was insufficient, the constituent was moved to a “characterize” list and CAP is charged with collecting additional baseline data. There were 19 compounds that were placed on the Characterization list.
- Many of these will likely be added to the Not Allowed/Non Detect list, but as these are naturally occurring compounds, the group felt it was important to conduct additional sampling to get a better picture of the background levels in CAP water.



## Developing Numeric Criteria

- In most cases, both an Introduction and Delivery standard are recommended, though in some cases establishing only one or the other was deemed necessary
- In addition to the standards identified for the six constituents established last June, standards for 25 additional constituents have been recommended.



## Consensus Proposal

- The core element of the Consensus Proposal is the table of Delivery Standards developed by the Stakeholder Group last summer, and which has remained unchanged (With one exception)

Priority Constituents	Point of Delivery Standards
Arsenic ug/l	5
Fluoride mg/l	0.7
Nitrate mg/l	1
TDS mg/l	723
TOC mg/l	4
Turbidity NTU	6



## Summary of Standards

- Summary Memo provided, includes description of the Method outlined and the appropriate tables containing the recommended numeric criteria



## Summary of Standards

Constituent	Units	CAP Introductory Standard	CAP Delivery Standard	Primary MCL	Secondary MCL
<b>General</b>					
Temperature	°F		Non-degradation	-	-
Dissolved Oxygen	mg/L		Non-degradation	-	-
pH		6.5 – 9.5		-	6.5-8.5
Turbidity	NTU	9	6	-	-
Total Dissolved Solids (TDS)	mg/L	1150	747	-	500
<b>Minor and Trace Metals</b>					
Antimony	µg/L	6	Characterize	6	-
Arsenic	µg/L	10	5	10	-
Barium, Total, ICAP/MS	µg/L	2000	230	2000	-
Chromium	µg/L	100	10	100	-
Copper, Dissolved	µg/L	64	64	1300	-
Hexavalent Chromium	µg/L	16	3	-	-
Iron, Dissolved ICAP	µg/L	1000	100	-	-
Lead	µg/L	15	3	15	-
Manganese, Total, ICAP	µg/L	250	27	-	50
Selenium	µg/L	50	20	50	-
Silver Total ICAP/MS	µg/L	100	20	-	100
Thallium, Total	µg/L	0.5	Characterize	0.5	-
Uranium	µg/L	30	5	30	-
Zinc	mg/L	1	0.03	-	5

Rows in grey were previously approved with June 7, 2018 consensus proposal.






# Summary of Standards

Constituent	Units	CAP Introductory Standard	CAP Delivery Standard	Primary	Secondary MCL
				MCL	
<b>Common Inorganic Compounds / Ions</b>					
Alkalinity in CaCO <sub>3</sub> units	mg/L	250	170	-	-
Calcium, Total, ICAP	mg/L	200	160	-	-
Chloride	mg/L	450	170	-	250
Fluoride	mg/L	4	0.7	-	2
Perchlorate	µg/L	15	No standard set	-	-
Sulfate	mg/L	400	250	-	250
<b>Agricultural Concerns</b>					
Boron	mg/L	1	0.15	-	-
Sodium, Total, ICAP	mg/L	350	110	-	-
<b>Nutrients</b>					
Ammonia Nitrogen	mg/L	Not allowed	Non Detect	-	-
Nitrate as Nitrogen	mg/L	10	1	10	-
Phosphorus, Total-P	mg/L	0.1	0.025	-	-
Total Organic Carbon	mg/L	6	4	-	-

Rows in grey were previously approved with June 7, 2018 consensus proposal.



Constituent	Units	CAP Introductory Standard	CAP Delivery Standard	Primary	Secondary MCL
				MCL	
<b>Common Inorganic Compounds / Ions</b>					
Alkalinity in CaCO <sub>3</sub> units	mg/L	250	170	-	-
Calcium, Total, ICAP	mg/L	200	160	-	-
Chloride	mg/L	450	170	-	250
Fluoride	mg/L	4	0.7	-	2
Perchlorate	µg/L	15	No standard set	-	-
Sulfate	mg/L	400	250	-	250
<b>Agricultural Concerns</b>					
Boron	mg/L	1	0.15	-	-
Sodium, Total, ICAP	mg/L	350	110	-	-
<b>Nutrients</b>					
Ammonia Nitrogen	mg/L	Not allowed	Non Detect	-	-
Nitrate as Nitrogen	mg/L	10	1	10	-
Phosphorus, Total-P	mg/L	0.1	0.025	-	-
Total Organic Carbon	mg/L	6	4	-	-
Rows in grey were previously approved with June 7, 2018 consensus proposal.					

Rows in grey were previously approved with June 7, 2018 consensus proposal.



# Summary of Standards

1,1,1,2-Tetrachloroethane	4-Isopropylbenzene	Bromodichloromethane	Diuron	Metolachlor	Profenofos
1,1,1-Trichloroethane	4-Methyl-2-Pentanone (MIBK)	Bromoethane	Endosulf	Metolachlor ethanesulfonic acid (ESA)	Propoxur
1,1,2,2-Tetrachloroethane	4-Nitrophenol (qualitative)	Bromoforn	Endrin	Metolachlor oxamic acid (OA)	Quinalone
1,1,2-Trichloroethane	Acetoph	Bromomethane (Methyl Bromide)	Equilenin	Molinate	RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)
1,1-Dichloroethane	Acetaldehyde	Butylated hydroxyanisole	Equilin	MonobromoaCetic Acid	sec-Butylbenzene
1,1-Dichloroethylene	Acetamide	Captan	Erythromycin	MonochloroAcetic Acid	Silicone
1,1-Dichloropropene	Acetochlor	Carbaryl	Estradiol (17-beta estradiol)	Naphthalene	Simazine
1,2,3-Trichlorobenzene	Acetochlor ethanesulfonic acid (ESA)	Carbofuran (Furadan)	Estrilol	N-ButylBenzene	Styrene
1,2,3-Trichloropropene	Acetochlor oxamic acid (OA)	Carbon Disulfide	Estrone	perfluorooctanesulfonamidoacetic acid (NEFOSAA)*	Tebuconazole
1,2,4-Trichlorobenzene	Acilufen	Carbon Tetrachloride	Ethinyl estradiol (17-alpha ethinyl estradiol)	Tebufenozide	Tert-ButylBenzene
1,2,4-Trimethylbenzene	Acroline	Chlorben	Ethiprop	Nitrobenzene	TetrachloroEthene
1,2-Dibromo-3-Chloropropene	Alachlor	Chlordane	Ethyl benzene	Nitroglycerin	Thiodicarb
1,2-Dichlorobenzene	Alachlor ethanesulfonic acid (OA)	Chlorobenzene	Ethylene Dibromide	"N-methyl"	Thiophanate-methyl
1,2-Dichloropropene	Aldicarb (Temik)	ChlorodibromoaCetic Acid	Ethylene glycol	perfluorooctanesulfonamidoacetic acid (NEFOSAA)*	Toluene
1,3,5-Trimethylbenzene	Aldicarb sulfoxide	Chloroethane	Ethylene oxide	N-Methyl-2-pyrrolidone	Toluene diisocyanate
1,3-Butadiene	Aldrin	Chloroform (Trichloromethane)	Ethylene thiourea	N-nitro-2-diethylamine (NDEA)	Tot DCPA Mono&Diacid Degradate
1,3-Dichlorobenzene	Alpha-Chloroethane	Chloromethane (Methyl Chloride)	N-nitro-2-diethylamine (NDEA)	N-nitro-2-di-n-propylamine (NDPA)	Total HaloAcetic Acids (HAAS)
1,3-Dichloropropene	Alpha-Hexachlorocyclohexane	cis-1,2-dichloroethane	N-nitro-2-di-n-propylamine (NDPA)	N-nitro-2-diethylamine (NPYR)	Total Kjeldahl Nitrogen
1,4-Dichlorobenzene	Aniline	Cyfluthrin	Nonylphenol	Heptachlor	Total PCB
1,4-Dioxane	Aroclor 1016	Dachal	Nonylphenol	Heptachlor Epoxide (isomer B)	Total TriHaloMethanes
1,4-Methoxyestradiol	Aroclor 1221	Dalapon	Ortho-Xylene	Hexachlorobenzene	Toxaphene
1-Butanol	Aroclor 1232	Di-(2-Ethylhexyl)adipate	o-Toluidine	Hexachlorobutadiene	Trans-1,2-DichloroEthene
2,2-Dichloropropene	Aroclor 1248	Di-(2-Ethylhexyl)phthalate (AKABS-2)	Oxamyl	Hexachlorocyclopentadiene	Trans-1,3-Dichloropropene
2,4,5-T	Aroclor 1254	ethylhexyl phthalate, DEHP*)	Oxime, methyl	Hexane	Trans-NorAchlor
2,4,5-TP (Silvex)	Aroclor 1260	Dibromochloromethane	Oxymelton-methyl	Hydrazine	TriChloroAcetic Acid
2,4-D	Atrazine	Dibromochloromethane	Oxyluorfen	Isopropylbenzene	TriChloroEthene
2-Butanone (MEK)	Baygon	Dibromomethane	ParaQuat	Lindane	TriChloroFluoroMethane
2-ChloroToluene	Bensulide	Dicamba	p-ChloroXylene	MP-Xylenes	Triethylenimine
2-Methoxyethanol	Bentazon	Dichloroacetic Acid	p-Dichlorobenzene (1,4-DCB)	Mestranol	Triphenyltin hydroxide (TPTH)
2-Propen-1-ol	Benzene	Dichlorodifluoromethane	PentaChloroPhenol	Methamidophos	Urethane
3,5-Dichlorobenzoic acid	Benzyl alcohol	Dichloromethane	Perfluorobutanesulfonic acid (PFBS)	Methanol	Vinclozolin
3-Hydroxy-carbafuran	Bis(2-Ethylhexyl) Phthalate	Dichloroprop	Perfluorodecanoic acid (PFDA)	Methocarb	Vinyl Chloride
4,4'-DDD	Bromobenzene	Diclotophos	Perfluorododecanoic acid (PFDA)	Methomyl	Xylenes (total)
4,4'-DDE	Bromochloroacetic Acid	Dieldrin	Perfluorooctanoic acid (PFHxO)	Mirex	Ziram
4,4'-DDT	Bromochloroacetic Acid	Di-isopropyl ether	Perfluorooxanoic acid (PFHxA)	Methyl-Tert-butyl ether (MTBE)	
4,4'-Methylenedianiline	Bromodichloroacetic Acid	Dinoseb			
4-Chlorotoluene		Diquat			

1.1.1.2-Tetrachloroethane	4-Isopropylbenzene	Bromodichloromethane	Duron	Melachlor	Profenofos
1.1.1.1-Trichloroethane	4-Methyl-2-Pentanol (MBK)	Bromobenzene	Endothal	Melachlor ethanesulfonic acid (ESA)	ProPoxur
1.1.2.2-Tetrachloroethane	4-Nitrophenol (qualitative)	Bromoforn	Endrin	Melachlor oxanilic acid (OA)	Quinoline
1.1.2.1-Trichloroethane	Acetaph	Bromomethane (Methyl Bromide)	Equinilin	Molinate	RDX (Hexahydro-1,3,5-trinitro- 1,3,5-triazine)
1.1-Dichloroethane	Acetaldehyde	Butylated hydroxyanisole	Equilin	MonobromoAcetic Acid	sec-Butylbenzene
1.1-Dichloroethylene	Acetamide	Captan	Erythromycin	MonochloroAcetic Acid	Silicone
1.1-Dichloropropane	Acetochlor	Carbaryl	Estradiol (17-beta estradiol)	Naphthalene	Simazine
1.2.3-Trichlorobenzene	Acetochlor ethanesulfonic acid (ESA)	Acetochlor (Furadan)	Estriol	N-butylbenzene	Styrene
1.2.3-Trichlorobenzene	Acetochlor oxanilic acid (OA)	Carbon Disulfide	Estrone	"N" ethyl	Tebuconazole
1.2.4-Trichlorobenzene	Acifluorfen	Carbon Tetrachloride	Ethirlyl estradiol (17-alpha ethiryl estradiol)	perfluorooctanesulfonamidooctylacetic acid ("NEIFOSAA")	Tebuconazole
1.2.4-Trimethylbenzene	Chloramben	Chloramben	Ethoprop	Nitrobenzene	Tert-Butylbenzene
1.2-Dibromo-3-Chloropropane	Alachlor	Chloride	Ethylbenzene	Nitroglycerin	TetraChloroEthene
1.2-Dichlorobenzene	Alachlor ethanesulfonic acid (ESA)	Chlorobenzene	Ethylene dibromide	"N"-methyl	ThioBenCarb
1.2-Dichloroethane	Alachlor oxanilic acid (OA)	Chlorodibromomethane	Ethylene glycol	perfluorooctanesulfonamidooctylacetic acid	Thiodicarb
1.2-Dichloropropane	Alidicarb (Temik)	Chlorodibromomethane	Ethylene glycol	(WUEFOSA)	Thiodicarb-methyl
1.2.4-Trimethylbenzene	Alidicarb sulfone	Chloroethane	Ethylene oxide	N-Methyl-2-pyrrolidone	Toluene
1.3-Butadiene	Alidicarb sulfoxide	Chloroform (Trichloromethane)	Ethylene thiourea	N-nitro-1,3-dichloroethylene (NDEA)	Toluene disocyanate
1.3-Dichlorobenzene	Aldrin	Chloromethane (Methyl Chloride)	"n"-nitro-1,3-dichloroethylene (NDEA)	"n"-methyl-2-methylamine (NDMA)	Tot DCPA Mono&Diacid Degradate
1.3-Dichloropropane	Alpha-Chloroane	cis-1,2-dichloroethane	Gi m	N-nitro-1,3-d-n-propylamine (NDPA)	Total HaloAcetic Acids (HAAS)
1.3-DichloroPropene	alpha-Hexachlorocyclohexane	C. thiodim	Gi m	N-nitro-1,3-d-n-propylamine (NDPA)	Total Kjeldahl Nitrogen
1.4-DichloroBenzene	Aniline	C. nene f. d. xiroid	Gi m	N-nitro-1,3-d-n-propylamine (NDPA)	Total PCB
1.4-Dioxane	Aroclor 1016	Cyanoacrylate	Glynn	N-nitro-1,3-d-n-propylamine (NDPA)	Total TDBH&Methanes
1.7alpha-estradiol	Aroclor 1221	Dacthal	HCF-22	N-nitro-1,3-d-n-propylamine (NDPA)	Toxaphene
1-Butanol	Aroclor 1232	Dalapon	Nephelochlor	N-nitro-1,3-d-n-propylamine (NDPA)	Trans-1,2-DichloroEthene
2.2-Dichloropropane	Aroclor 1242	Di-(2-Ethylhexyl)adipate	Heptachlor Epoxide (Isomer B)	N-Propylbenzene	Trans-1,3-Dichloropropene
2.4,5-T	Aroclor 1248	"Di(2-Ethylhexyl)phthalate (AKA Bis (2-ethylhexyl) phthalate, DEHP)"	Hexachlorobenzene	Ortho-Xylene	Trans-1,3-Dichloropropene
2.4,5-TP (Silvex)	Aroclor 1254	Dibromocyclohexane	Hexachlorobutadiene	o-Tolidine	Trans-Nonachlor
2.4-D	Aroclor 1260	Dibromocyclohexane	Hexachlorocyclopentadiene	Oxamyl	Tributols
2.4-DB	Atrazine	Dibromochloromethane	Hexane	Oxirane, methyl	TrichloroAcetic Acid
2-Butanone (MEK)	Baygon	Dibromomethane	Hydrazine	Oxymetol-methyl	TrichloroEthene
2-Chlorotoluene	Bensulfide	Dichloromethane	Hydroxybenzene	Oxyfluorfen	TrichlorofluoroMethane
2-Methoxyethanol	Benztazon	Dichloroacetic Acid	Lindane	ParaOuat	Triethylamine
2-Propen-1-ol	Benzene	Dichlorodifluoromethane	M/P-Xylenes	p-Chlorotoluene	Triphenyltin hydroxide (TPTH)
3,5-Dichlorobenzoic acid	Benzene(a)pyrene	Dichloromethane	m-Dichlorobenzene (1,3-DCB)	p-Dichlorobenzene (1,4-DCB)	Urethane
3-Hydroxycarborolan	Benzyl chloride	Dichloroprop	Mestranol	PentaChloroPhenol	Vinclozolin
4.4-DDD	Bis(2-Ethylhexyl) Phthalate	Dicropthos	Methamidophos	Perfluorobutanesulfonic acid (PFBS)	Vinyl Chloride
4.4-DDE	Bromobenzene	Dieldrin	Methanol	Perfluorooctanoic acid (PFDA)	Xylenes (total)
4.4-DDT	Bromochloroacetic Acid	Di-Isopropyl ether	Methiocarb	Perfluorodecanoic acid (PFDA)	Ziram
4.4-Methyldianiline	Bromodichloromethane	Methoxybenzene	Methoxychlor	Perfluorohexanoic acid (PFHA)	
4-Chlorotoluene	Bromodichloroacetic Acid	Dinoseb	Methyl Tert-butyl ether (MTBE)	Perfluorooxanesulfonic acid (PFSA)	
		Diquat			



## Numeric Criteria – Key Points

### Turbidity

The introductory standard for turbidity (9 ntu) is offered as a guideline to be met by operational controls and/or daily averaging.

Significant storms or flooding expected to result in turbid waters will result in operational decisions to discontinue delivery into the CAP system until such an events pass.



## Numeric Criteria – Key Points

### Alkalinity

The City of Tucson raised specific concerns regarding alkalinity increasing over time in their regional aquifer.

After further discussions and evaluation, it was determined that historically CAP water has a very narrow band of fluctuation relative to alkalinity. The narrow band suggests the possibility that there is significant alkalinity buffering occurring in the CAP water supply, and that introduced supplies with higher alkalinity may not raise the median level.

CAP is tasked with analyzing the buffering potential.



## Numeric Criteria – Key Points

### Pathogens

No specific standards on pathogens were set but generally pathogens should not be allowed. The group recommends that pathogens should be addressed in the specific project approval process and continually be part of the water quality review program which would include monitoring



## Numeric Criteria – Key Points

### Salinity

Point of Delivery Standard to be changed to 747 mg/L to reflect Colorado River Basin Salinity Control Forum Numeric Criteria at Parker Dam instead of Hoover Dam.



## Next Steps for 2019

1. Expand existing CAP water quality monitoring program
2. Further Develop Implementation guidelines
3. Coordinate with Reclamation and support consultations as needed

Newly formed “Water Transmission Group”



YOUR WATER. YOUR FUTURE.



**DATE:** January 7, 2019  
**TO:** Water Quality Introductory and Delivery Standards  
**SUBJECT:** Proposed Numeric Criteria for Broad Suite of Water Quality Constituents

At the June 7, 2018 CAWCD Board meeting, staff and stakeholders presented a consensus proposal for the introduction of non-Colorado River water into the CAP system. The proposal identified standards for six key constituents and an outline for additional components of a full standard to be developed. The recommendation from the June 7 Board meeting is attached for reference.

Following the approval of the consensus proposal, CAP staff and a subset of subject-matter experts<sup>1</sup> from the broader stakeholder group were tasked with developing a full list of numeric criteria for a broad suite of water quality constituents. That work has been ongoing since June and has largely consisted of a review of available water quality data and supporting analysis. Data collected and reviewed included CAP water quality data as well as available water quality data from potential groundwater and surface water sources that may be introduced into the CAP system.

### **Methodology**

The review included a thorough constituent-by-constituent review and discussion, generally regarding three questions:

1. Is there sufficient data available to make a recommendation to establish numeric criteria?
2. Is the given constituent prohibited from introduction into the CAP system at the current detection level?
3. Does a particular constituent require an introduction or delivery numeric standard?

For a broad number (85%) of the constituents reviewed it was proposed to not permit any introduction at current detection limits. The vast majority of these are synthetic or petrochemical volatile and nonvolatile organics that are not commonly found in the CAP system or other natural water(s) and are generally associated with industrial activities.

There was notable discussion on the role of detection limits that could be applied to many of these compounds. Fundamentally, a particular compound may not be detectable with current laboratory technologies, but detection and quantification limits are constantly improving. Changes in technologies that potentially expose the measurement of a particular compound that had previously been non-detectable does not necessarily render the imported water non-compliant. Rather the new detection

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<sup>1</sup> Including, Dr. Peter Mock (GRIC); Melodee Loyer, Sandy Elder (Tucson), Brian Biesemeyer Kathy Rall, (Scottsdale), Troy Hayes (Phoenix), Christa McJunkin, Mike Ploughe (SRP), Chris Connor (Chandler), Warren Tenney (AMWUA)

limit would be reviewed in context of any relevant industry practices or emerging science regarding the compound. This review would be a requirement of the water quality monitoring program going forward.

Discussions for each constituent or constituent group were examined based on those fundamental queries. If there was not sufficient data available, or a current Maximum Contaminant Level (MCL) to recommend a specific introductory or delivery standard, a “characterize” response was noted. Characterization is a request to CAP to collect the needed water quality data for further evaluation. Characterization was limited to only 4% of the constituents in the list. Generally, when characterization was recommended it was determined that it is reasonable to allow sufficient time for data collection and review to occur without a significant impact to the overall water quality of the system. Those constituents identified for additional characterization are listed in Table 1.

<b>Table 1 CHARACTERIZATION &amp; MONITORING<sup>2</sup></b>	
Aluminum, Total, ICAP	Molybdenum
Antimony	Nickel
Bromide	Nitrite
Beryllium	Potassium, Total, ICAP
Cadmium	Radium-226+228
Cobalt, Total	Strontium, ICAP
Germanium	Tellurium
Gross Alpha	Thallium
Gross Beta	Vanadium
Mercury	

If sufficient data was available for the compound and the review concluded a reasonable basis for developing criteria, the technical group deliberated on an appropriate introductory and/or delivery standard. The result of those efforts are contained in Table 2 and reflect a continued consensus approach among CAP staff and stakeholders.

<b>Table 2 CAP WATER QUALITY STANDARDS FOR NON-PROJECT WATER</b>			
<b>Constituent</b>	<b>Units</b>	<b>CAP Introductory Standard</b>	<b>CAP Delivery Standard</b>
<b>General</b>			
Temperature	°F		Non-degradation
Dissolved Oxygen	mg/L		Non-degradation
pH		6.5 – 9.5	

<sup>2</sup> These compounds are all naturally occurring, changes in detection limits may make these detectable in imported and project water in the future.

<b>Table 2 CAP WATER QUALITY STANDARDS FOR NON-PROJECT WATER</b>			
<b>Constituent</b>	<b>Units</b>	<b>CAP Introductory Standard</b>	<b>CAP Delivery Standard</b>
Turbidity	NTU	9	6
Total Dissolved Solids (TDS)	mg/L	1150	747
<b>Minor and Trace Metals</b>			
Antimony	µg/L	6	Characterize
Arsenic	µg/L	10	5
Barium, Total, ICAP/MS	µg/L	2000	230
Chromium	µg/L	100	10
Copper, Dissolved <sup>3</sup>	µg/L	64	64
Hexavalent Chromium	µg/L	16	3
Iron, Dissolved ICAP	µg/L	1000	100
Lead	µg/L	15	3
Manganese, Total, ICAP	µg/L	250	27
Selenium	µg/L	50	20
Silver Total ICAP/MS	µg/L	100	20
Thallium, Total	µg/L	0.5	Characterize
Uranium	µg/L	30	5
Zinc	mg/L	1	0.03
<b>Common Inorganic Compounds / Ions</b>			
Alkalinity in CaCO <sub>3</sub> units	mg/L	250	170
Calcium, Total, ICAP	mg/L	200	160
Chloride	mg/L	450	170
Fluoride	mg/L	4	0.7
Perchlorate	µg/L	15	No standard set
Sulfate	mg/L	400	250
<b>Agricultural Concerns</b>			
Boron	mg/L	1	0.15
Sodium, Total, ICAP	mg/L	350	110
<b>Nutrients</b>			
Ammonia Nitrogen	mg/L	Not allowed	Non Detect
Nitrate as Nitrogen	mg/L	10	1
Phosphorus, Total-P	mg/L	0.1	0.025
Total Organic Carbon	mg/L	6	4
Rows in grey were previously approved with June 7, 2018 consensus proposal.			

<sup>3</sup> Standards based on the ADEQ standards for aquatic, warm, ephemeral surface water

### Temperature and Dissolved Oxygen (DO)

For Temperature and DO, no specific standards were identified, but the objective is non-degradation of existing canal water quality. While there is general concern about localized effects on canal biology from imported water that is anoxic or at extreme temperatures, it was concluded that any localized effects would be addressed in the project approval water quality review process.

### Turbidity

Natural variability in turbidity, particularly at lower levels, is common and caused by biological activity and/or short-term event driven circumstances. For example, sensors reading turbidity in real-time can often show a range of 3-15 NTU in a 24 hour period due to algal activity alone. This pattern will generally mimic that of the 24 hour dissolved oxygen cycle observed in shallow surface waters. Additionally, short-term disturbance near a sensor from fish and or floating debris can often show elevated turbidity for several minutes and then pass. Brief rainfall events can also result in short-term but localized higher turbidity events. As such, the introductory standard for turbidity is offered as a guideline to be met by operational controls and/or daily averaging. Discharges during events such as significant storms or flooding that are expected to result in turbid waters would by nature result in operational decisions to discontinue discharges until such events pass.

### Alkalinity

Significant discussion occurred with respect to alkalinity. The City of Tucson raised specific concerns with the long-term median of alkalinity increasing over time in their regional aquifer, and the impacts that are projected to occur in their distribution system unless pH adjustment is implemented. Tucson objects to having to implement any treatment process due to the introduction of non-project water to the canal, and contends that the entity introducing non-project water to the canal should bear the cost of treatment. Consequently, they requested that introduced waters not increase the alkalinity median in the CAP source water.

After further discussions and evaluation, it was determined that historically CAP water has a very narrow band of fluctuation relative to alkalinity. The narrow band suggests the possibility that there is significant alkalinity buffering occurring in the CAP water supply, and that introduced supplies with higher alkalinity may not raise the median level. CAP staff will continue to analyze the buffering potential. Given this discussion, and commitment for further evaluation of buffering potential, Tucson suspended its objections to the proposed introductory and delivery standards. If it is found that buffering in the canal is not effective, pH adjustment of non-project water may be necessary.

### Salinity (TDS)

Salinity was one of the set of six standards addressed under the June 7<sup>th</sup> consensus proposal, and the delivery standard of 723 mg/L was tied to the standard adopted by the Colorado River Basin Salinity Control Forum at Hoover Dam. However, the Forum's standard at Parker Dam (Lake Havasu, where CAP's intake is located) is 747 mg/L. It was acknowledged that the consensus proposal was intended to conform to the standard established by the Forum at the point of CAP diversion, consequently the delivery standard was adjusted to align with the criteria at Parker Dam of 747 mg/L.



#### Algal Toxins

Algal toxins will be monitored and measured as needed. Data collected from regional sources will also be incorporated.

#### Pathogens

No specific standards on pathogens were set but generally pathogens should not be allowed. The group recommends that pathogens should be addressed in the specific project approval process and continually be part of the water quality review program which would include monitoring. Specific Pathogens reviewed are identified in Table 3

<b>Table 3 PATHOGENS</b>	
Cryptosporidium	E. Coli
Giardia	HPC
Coliform, Total	L. Pneumophila

## Prohibited Compounds

Compounds that are prohibited from introduction into the CAP system at current detection limits are listed below in Table 4.

Table 4 NOT ALLOWED / NON-DETECT		
1,1,1,2,-Tetrachloroethane	Bromoethane	Metolachlor oxanilic acid (OA)
1,1,1-Trichloroethane	Bromoform	Molinate
1,1,2,2-Tetrachloroethane	Bromomethane (Methyl Bromide)	MonoBromoaCetic Acid
1,1,2-Trichloroethane	Butylated hydroxyanisole	MonoChloroAcetic Acid
1,1-Dichloroethane	Captan	Naphthalene
1,1-Dichloroethylene	Carbaryl	N-ButylBenzene
1,1-Dichloropropene	Carbofuran (Furadan)	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
1,2,3-Trichlorobenzene	Carbon Disulfide	Nitrobenzene
1,2,3-Trichloropropane	Carbon Tetrachloride	Nitroglycerin
1,2,4-Trichlorobenzene	Chloramben	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
1,2,4-Trimethylbenzene	Chlordane	N-Methyl-2-pyrrolidone
1,2-Dibromo-3-Chloropropane	Chlorobenzene	N-nitrosodiethylamine (NDEA)
1,2-Dichlorobenzene	Chlorodibromoacetic Acid	N-nitrosodimethylamine (NDMA)
1,2-Dichloroethane	Chlorodibromomethane	N-nitroso-di-n-propylamine (NDPA)
1,2-Dichloropropane	Chloroethane	N-Nitrosodiphenylamine
1,3,5-Trimethylbenzene	Chloroform (Trichloromethane)	N-nitrosopyrrolidine (NPYR)
1,3-Butadiene	Chloromethane(Methyl Chloride)	Nonylphenol2
1,3-Dichlorobenzene	cis-1,2-Dichloroethylene	Norethindrone (19- Norethisterone)
1,3-Dichloropropane	Clethodim	N-PropylBenzene
1,3-DichloroPropene	Cumene hydroperoxide	Ortho-Xylene
1,4 DichloroBenzene	Cyanotoxins	o-Toluidine
1,4-Dioxane	Dacthal	Oxamyl
17alpha-estradiol	Dalapon	Oxirane, methyl
1-Butanol	Di-(2-Ethylhexyl)adipate	Oxydemeton-methyl
2,2-Dichloropropane	Di(2-Ethylhexyl)phthalate (AKA Bis (2-ethylhexyl) phthalate, DEHP)	Oxyfluorfen
2,4,5-T	Dibromoacetic Acid	ParaQuat
2,4,5-TP (Silvex)	Dibromochloromethane	p-Chlorotoluene
2,4-D	Dibromomethane	p-Dichlorobenzene (1,4-DCB)
2,4-DB	Dicamba	PentaChloroPhenol
2-Butanone (MEK)	Dichloroacetic Acid	Perfluorobutanesulfonic acid (PFBS)
2-ChloroToluene	Dichlorodifluoromethane	Perfluorodecanoic acid (PFDA)

**Table 4 NOT ALLOWED / NON-DETECT**

2-Methoxyethanol	Dichloromethane	Perfluorododecanoic acid (PFDoA)
2-Propen-1-ol	Dichlorprop	Perfluoroheptanoic acid (PFHpA)
3,5-Dichlorobenzoic acid	Dicrotophos	Perfluorohexanesulfonic acid (PFHxS)
3-Hydroxycarbofuran	Dieldrin	Perfluorohexanoic acid (PFHxA)
4,4'-DDD	Di-isopropyl ether	Perfluorononanoic acid (PFNA)
4,4'-DDE	Dimethipin	Perfluorooctanesulfonic acid (PFOS)
4,4'-DDT	Dinoseb	Perfluorooctanoic acid (PFOA)
4,4'-Methylenedianiline	Diquat	Perfluorotetradecanoic acid (PFTA)
4-Chlorotoluene	Diuron	Perfluorotridecanoic acid (PFTrDA)
4-IsopropylToluene	Endothall	Perfluoroundecanoic acid (PFUnA)
4-Methyl-2-Pentanone (MIBK)	Endrin	Permethrin
4-Nitrophenol (qualitative)	Equilenin	Picloram
Acephate	Equilin	p-Isopropyltoluene
Acetaldehyde	Erythromycin	Profenofos
Acetamide	Estradiol (17-beta estradiol)	ProPoxur
Acetochlor	Estriol	Quinoline
Acetochlor ethanesulfonic acid (ESA)	Estrone	RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)
Acetochlor oxanilic acid (OA)	Ethynyl estradiol (17-alpha ethynyl estradiol)	sec-Butylbenzene
Acifluorfen	Ethoprop	Silicone
Acrolein	Ethyl benzene	Simazine
Alachlor	Ethylene Dibromide	Styrene
Alachlor ethanesulfonic acid (ESA)	Ethylene glycol	Tebuconazole
Alachlor oxanilic acid (OA)	Ethylene oxide	Tebufenozide
Aldicarb (Temik)	Ethylene thiourea	Tert-ButylBenzene
Aldicarb sulfone	Fluorotrichloromethane-Freon11	TetraChloroEthene
Aldicarb sulfoxide	Formaldehyde	ThioBenCarb
Aldrin	Gamma-BHC	Thiodicarb
Alpha-Chlordane	Gamma-Chlordane	Thiophanate-methyl
alpha-Hexachlorocyclohexane	Glyphosate	Toluene
Aniline	HCFC-22	Toluene diisocyanate
Aroclor 1016	Heptachlor	Tot DCPA Mono&Diacid Degradate
Aroclor 1221	Heptachlor Epoxide (isomer B)	Total HaloAcetic Acids (HAAS)
Aroclor 1232	Hexachlorobenzene	Total Kjeldahl Nitrogen
Aroclor 1242	Hexachlorobutadiene	Total PCB
Aroclor 1248	Hexachlorocyclopentadiene	Total TRiHaloMethanes

Table 4 NOT ALLOWED / NON-DETECT		
Aroclor 1254	Hexane	Toxaphene
Aroclor 1260	Hydrazine	Trans-1,2-DichloroEthene
Atrazine	Isopropylbenzene	Trans-1,3-Dichloropropene
Baygon	Lindane	Trans-NonAchlor
Bensulide	M/P-Xylenes	Tribufos
Bentazon	m-Dichlorobenzene (1,3-DCB)	TriChloroAcetic Acid
Benzene	Mestranol	TriChloroEthene
Benzo(a)pyrene	Methamidophos	TriChloroFluoroMethane
Benzyl chloride	Methanol	Triethylamine
Bis(2-Ethylhexyl) Phthalate	Methiocarb	Triphenyltin hydroxide (TPTH)
Bromobenzene	Methomyl	Urethane
Bromochloroacetic Acid	Methoxychlor	Vinclozolin
Bromochloromethane	Methyl Tert-butyl ether (MTBE)	Vinyl Chloride
Bromodichloroacetic Acid	Metolachlor	Xylenes (total)
Bromodichloromethane	Metolachlor ethanesulfonic acid (ESA)	Ziram

## **Consensus Proposal on Water Quality Standards**

CAP Staff and Stakeholders view water quality standards for non-Project Water as part of a multi-faceted approach that includes:

**1. Monitoring, Modeling and Data Sharing** *[This section to be expanded to include establishment of a refined baseline before projects begin, and comprehensive evaluation of the effects of introduced supplies]*

**a. Enhanced Reporting and Data Coordination**

- i.* Ongoing support for CAP's WQ program
- ii.* Enhanced tools to model WQ impacts
- iii.* Annual presentation of WQ information to the Board & stakeholders
- iv.* Facilitation of data sharing among current users

**b. Mandatory Monitoring of Non-Project Supply**

- i.* Parties introducing supply pay all costs (*SUA §12.2; Standard Form Wheeling Contract §10.2*)
- ii.* Monitoring requirements tailored to each project based on project-specific factors (e.g., size, concentrations, location, etc.)

**2. Project Evaluation and Design**

**a. Project Evaluation**—*Mandatory technical evaluation of the interaction of introduced supply with existing supply (chemical & physical properties) [This section will be expanded to more explicitly address any operational impacts that a project could have on the CAP system]*

- i.* Applies regardless of water quality
- ii.* May involve modeling, testing, etc
- iii.* Parties introducing supply pay all costs

**b. Project Design**

- i.* "Inside the Fence" sampling point
- ii.* May require multiple "turn-in" points to minimize localized effects
- iii.* Introduction of supply may be required to be proportional to CAP flow
  - CAP operations will **not** be adjusted for non-Project WQ

**3. Numeric Standards**

**a. Excluded Constituents**—*Things that cannot be present in non-Project supplies*

- i.* Measured at point of introduction
- ii.* Set at defined non-detect level
- iii.* Applied on an ongoing basis, and fully enforceable
- iv.* Initial proposal from Stakeholder group includes PFOA/PFAA, perchlorate, and cyanide
  - Expanded list to be developed with Stakeholder input

**b. Delivery Standards**—*Quality of comingled water delivered at CAP turnouts*

- i. As proposed by Stakeholder Group
  - Expanded list to be developed with Stakeholder input

Priority Constituents	Proposed Standard	units
<b>Arsenic</b>	5	µg/l
<b>Fluoride</b>	0.7	mg/l
<b>Nitrate</b>	1	mg/l
<b>TDS</b>	723	mg/l
<b>TOC</b>	4	mg/l
<b>Turbidity</b>	6	NTU

- ii. Highly protective of existing quality
  - Within historic range and/or twice as stringent as the National Drinking Water standards
  - Applied during evaluation phase of a proposed project, based on a shortage-reduced CAP supply of 1 MAF, and inclusion of all other approved projects
  - Standard is a basis for project denial or modification, but it is not a guarantee of a specific water quality delivered by CAP

**c. Introduction Standards—*Quality of the Non-Project Water supply***

- i. Measured at point of introduction
- ii. Standard based on multiple factors—considered for each constituent
  - Equity; flexibility; certainty; risk; margin of safety; public acceptance; likely sources; mixing capacity; geography; cost; existing standards; operational factors
- iii. Applied on an ongoing basis, and fully enforceable

Priority Constituents	Proposed Standard	units
<b>Arsenic</b>	10	µg/l
<b>Fluoride</b>	4	mg/l
<b>Nitrate</b>	10	mg/l
<b>TDS</b>	1150	mg/l
<b>TOC</b>	6	mg/l
<b>Turbidity</b>	9	NTU

**d. Re-evaluation of Standards**

- i. Every 5 years, starting after the first introduction of non-Project Water
  - Constituents can be added to the Excluded Constituent list more frequently

## 4. Project Approvals

**a. Approval by CAWCD and/or Reclamation**

- i.* Provides opportunity to consider overall merits of a project
  - Note, not all projects are subject to CAWCD approval

**b. NEPA Compliance**

- i.* Required for each project due to federal ownership of CAP system

**c. [AZPDES Permitting?]**

- i.* [General Use Permit?]

**5. Enforcement**

**a. CAP has full contractual enforcement authority**

- i.* Party introducing supply is responsible for compliance (*SUA §12.2*)
- ii.* Required indemnification (*SUA §12.3*)

**b. CAP will have operational control**

- i.* Inspection of facilities and remote shut-off capability

**c. CAP will establish operating procedures for addressing exceedances, missing data, etc.**

- i.* Burden of 'proof' on party introducing supply