



Technical Customer Advisory Committee

AGENDA

Members

David Brookshire	Mike Hightower
Cassandra D'Antonio	Elaine Hebard
Amy Ewing	Laura McCarthy
Laurie Firor	Ege Richardson
Moises Gonzales	

Thursday, November 5, 2015	4:00 PM	City Hall – 3rd Floor Conference Room 304
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|--------------------------------------------------------|-----------|
| 1. Call to Order – Note presence of quorum | 4:00-4:05 |
| 2. Approval of Agenda | 4:00-4:05 |
| 3. Approval of October 1, 2015 Action Summary | 4:00-4:05 |
| 4. 2016 Work Plan | 4:05-4:15 |
| 5. Evaluation Criteria for Ranking Supply Alternatives | 4:15-5:30 |
| 6. Elaine Hebard Presentation | 5:30-5:45 |
| 7. Public Comment | 5:45-5:55 |
| 8. Final Comments or Questions | 5:55-6:00 |
| 9. Adjournment | 6:00 |

NOTICE TO PERSONS WITH DISABILITIES: If you have a disability and require special assistance to participate in this meeting, please contact the Water Utility Authority Office, Suite 5012, Albuquerque/Bernalillo County Government Center, phone 768-2500 or by the TTY 1-800-659-8331, as soon as possible prior to the meeting date.



Technical Customer Advisory Committee

ACTION SUMMARY

October 1, 2015

Members Present:

David Brookshire
Cassandra D'Antonio
Amy Ewing
Laurie Firor
Mike Hightower
Elaine Hebard
Laura McCarthy
Ege Richardson

Members Excused:

Moises Gonzales

Water Authority Staff Present:

John Stomp, Chief Operations Officer
Katherine Yuhas, Water Conservation Officer
Rick Shean, Water Quality Hydrologist

Consultants Present:

David Jordan, INTERA Inc.
Greg Gates, CH2M
John Shomaker, John Shomaker and Associates

Others Present:

Tom Parker, CDM Smith

Item 1 – Call to Order - Note presence of quorum

The meeting was called to order at 4:01 pm by Chair Amy Ewing.

Item 2 – Approval of Agenda

Cassandra D'Antonio made a motion to approve the agenda as amended. David Brookshire seconded the motion. The motion passed on a 6-0 vote.

For: 6 Brookshire, D'Antonio, Ewing, Firor, Hebard, Richardson
Against: 0
Excused: 3 Gonzales, Hightower, McCarthy

Item 3 – Approval of September 3, 2015 Action Summary

Elaine Hebard made a motion to approve the action summary as amended. Laurie Firor seconded the motion. The motion passed on a 6-0 vote.

For: 6 Brookshire, D’Antonio, Ewing, Firor, Hebard, Richardson
Against: 0
Excused: 3 Gonzales, Hightower, McCarthy

Laura McCarthy entered the meeting at 4:15 pm. Mike Hightower entered the meeting at 4:45 pm.

Item 6 – Final Comments or Questions

Elaine Hebard highlighted the key points from her twelve-page memo. John Stomp asked questions regarding the data and other information in the memo, and he requested guidance from the TCAC members on how to respond. It was recommended to allocate 15 minutes at the next meeting for Ms. Hebard to present her concerns. The TCAC also requested that staff develop a work plan for updating the Water Resources Management Strategy (WRMS) which would outline the committee’s involvement and provide a schedule from October through the governing board’s adoption of the WRMS.

Item 4 – Presentation and Discussion on WRMS 2017 Update

John Stomp reviewed the WRMS Update process and schedule. He reviewed the accomplishments and results from implementing the 2007 WRMS to date. He also compared the differences between the 1997 and 2007 WRMS of when a new water supply would be needed. He showed how demand projections have decreased from 175 to 135 gpcd since 1997. David Jordan reviewed the demand and supply components of the scenario-based planning process. He showed how the gap analysis would be used to in establishing new projects and policies to address the supply gaps. Greg Gates provided an overview of recent water planning in the West and showed how the Middle Rio Grande basin compares to other major metropolitan areas. John Shomaker discussed the proposed 2017 groundwater management policy and the three components of the aquifer: 1) Below Subsidence Threshold: No Pumping; 2) Safety Reserve: Pumping Only in Emergency; and 3) Working Reserve: Pump with Restoration Plan. He demonstrated the impacts of water level decline with time of pre-groundwater management, current groundwater management, and the proposed groundwater management policy.

Item 5 – Public Comment

No public comments were provided.

Item 7 – Adjournment

The meeting concluded at 5:43 pm.

Water Resources Management Strategy 2017 Update

ABCWUA TCAC November 5, 2015

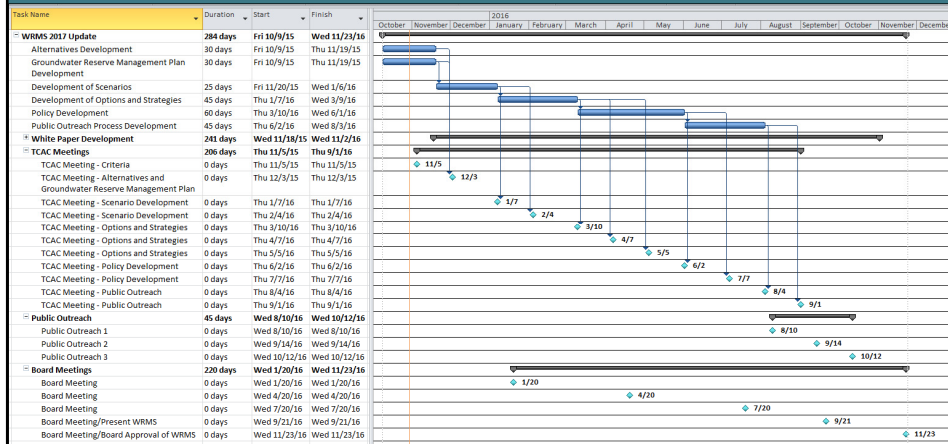


Follow-On from the 10/1 Meeting

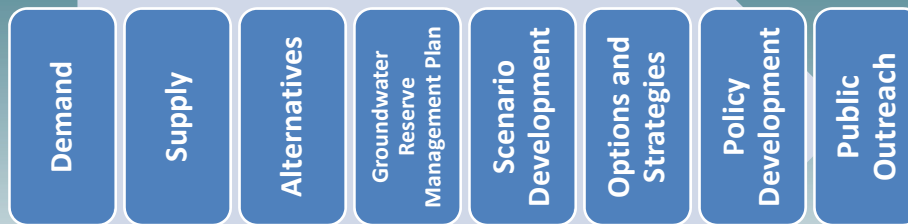
- 1. Work Plan Schedule**
- 2. Response to input on criteria**
 - **Quality of Life**
 - **Cultural, Historic, and Aesthetic Values**
 - **Socioeconomic Impact**
 - **Environmental Protection**
 - **Ecosystem Protection**
 - **Carbon Footprint**



Draft Proposed Work Plan and Schedule



Draft Proposed Work Plan and White Papers



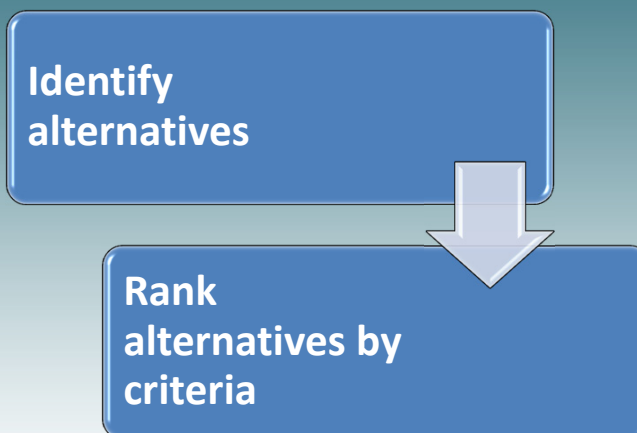
What are we doing with the criteria?

1. **Relative ranking** of the alternatives by the project team
2. Determine which alternatives are the most viable, and will be included in the most likely supply portfolios
3. Allocate effort to evaluate the most viable alternatives, but keep lower-ranked alternatives for potential future consideration
4. **No alternatives will be cut from the list**
5. This portion of the analysis is mostly quantitative, but still includes some qualitative elements for now



Decision Analysis Process (Step 1)

Project team will rank alternatives by criteria



Example Ranking

Example Ranking – Values will be Revised

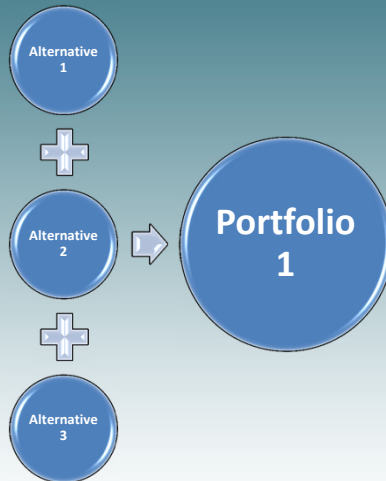
Alternative	Rank	Yield	Reliability	Regional Impact	Technical Feasibility	Permitting	Time to Implement	Cultural, Historical, and Aesthetic Values	Socioeconomic Impact	Ecosystem Protection	Carbon Footprint	Total Score
Conservation	1	3	1	3	1	1	1	3	3	2	1	20
Non-potable and reuse												
Expand non-potable reuse	2	4	2	2	1	2	1	2	2	2	1	21
ASR												
Additional large-scale ASR projects	3	2	2	1	3	3	2	3	3	3	2	27
Stormwater capture from existing facilities with spreading basins for infiltration	5	3	4	1	3	3	3	3	3	3	1	32
New Supplies												
Produced water	7	3	1	3	3	3	3	3	3	3	5	37
Brackish groundwater	6	3	3	1	3	4	3	3	3	3	5	35
Watershed management	4	3	4	3	2	4	2	3	3	1	1	29

Example Results Only – Do Not Quote or Cite



Decision Analysis Process (Step 2)

Combine most viable alternatives into portfolios



Example Portfolio Development – Low Carbon Footprint

Apply Threshold Values		Yield	Reliability	Frequency of Availability	Regional Impact	Technical Feasibility	Permitting	Time to Implement	Aesthetic Ranking	Socioeconomic Impact	Ecosystem Protection	Carbon Footprint	
Threshold Values		5	5	5	5	5	5	5	5	5	5	1	
Alternative	Rank	Yield	Reliability	Frequency of Availability	Regional Impact	Technical Feasibility	Permitting	Time to Implement	Cultural, Historical, and Aesthetic Values	Socioeconomic Impact	Ecosystem Protection	Carbon Footprint	Total Score
Conservation	1	3	1	1	3	1	1	1	3	3	2	1	20
Non-potable and reuse													
Expand non-potable reuse	2	4	2	2	2	1	2	1	2	2	2	1	21
ASR													
Additional large-scale ASR projects	3	2	2	2	3	3	3	2	3	3	3	2	27
Stormwater capture from existing facilities with spreading basins for infiltration	5	3	4	1	3	3	5	3	3	3	3	1	32
New Supplies													
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Brackish groundwater	6	3	3	1	3	3	4	3	3	3	3	5	35
Watershed management	4	3	4	3	2	3	3	3	2	3	1	1	29

Example Ranking – Values will be Revised

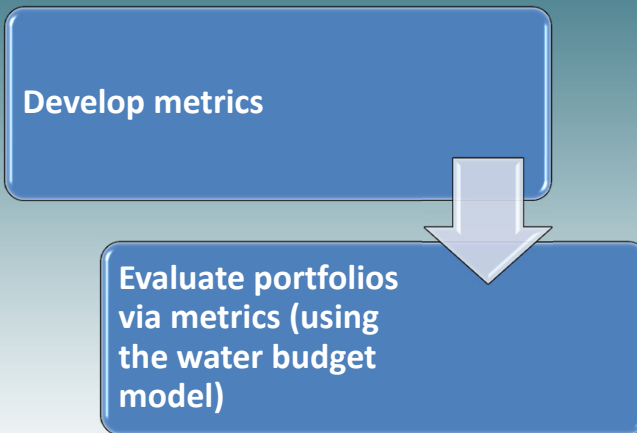
Apply Threshold Values		Yield	Reliability	Frequency of Availability	Regional Impact	Technical Feasibility	Permitting	Time to Implement	Aesthetic Ranking	Socioeconomic Impact	Ecosystem Protection	Carbon Footprint	
Threshold Values		5	5	5	5	5	5	5	5	5	5	1	
Alternative	Rank	Yield	Reliability	Frequency of Availability	Regional Impact	Technical Feasibility	Permitting	Time to Implement	Cultural, Historical, and Aesthetic Values	Socioeconomic Impact	Ecosystem Protection	Carbon Footprint	Total Score
Conservation	1	3	1	1	3	1	1	1	3	3	2	1	20
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Watershed management	4	3	4	3	2	4	3	3	2	3	1	1	29

Example Results Only – Do Not Quote or Cite

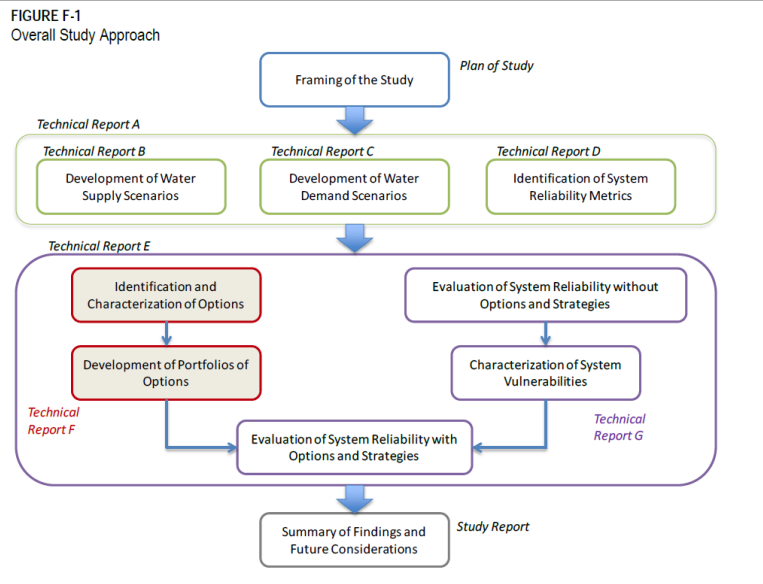


Decision Analysis Process (Step 3)

Develop metrics and evaluate portfolios

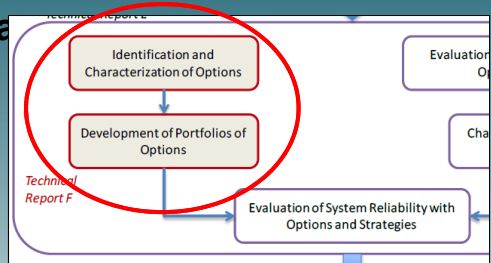


Colorado Basin Study as an Analog



Colorado Basin Study as an Analog

They used broad criteria to characterize (rank) representative options (“options” are equivalent to our “alternatives”)



Recreation	Potential impacts to recreational activities including in-river and shoreline activities
Other Environmental Factors	Other environmental considerations, such as impacts to air quality, or aquatic, wetland, riparian, or terrestrial habitats
Socioeconomics	Potential impacts to socioeconomic conditions in regions within or outside of the Basin as a result of implementing the option



Colorado Basin Study as an Analog

A – F Ranking

FIGURE F-3
Summary Characterization for Importation Options



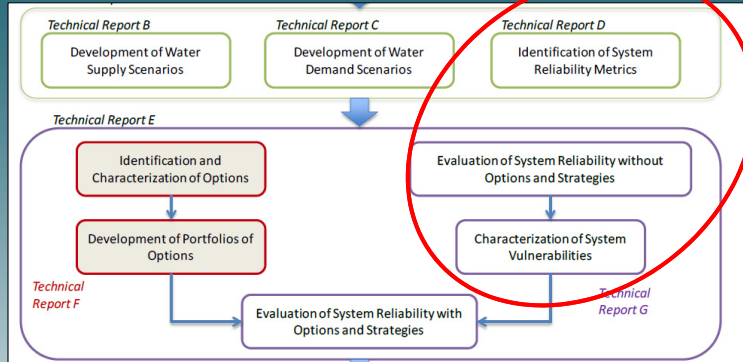
Our Process is Similar

Example Ranking – Values will be Revised

Alternative	Rank	Yield	Reliability	Regional Impact	Technical Feasibility	Permitting	Time to Implement	Cultural, Historical, and Aesthetic Values	Socioeconomic Impact	Ecosystem Protection	Carbon Footprint	Total Score
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Non-potable and reuse	2	4	2	2	3	2	1	2	2	2	1	21
Expand non-potable reuse	3	2	2	1	3	3	2	3	3	3	2	27
ASR	5	3	4	1	3	3	3	3	3	3	1	32
Additional large-scale ASR projects												
Stormwater capture from existing facilities with spreading basins for infiltration												
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Produced water	7	3	1	3	3	5	3	3	3	3	5	37
Brackish groundwater	6	3	3	1	3	4	3	3	3	3	5	35
Watershed management	4	3	4	3	2	4	2	3	3	1	1	29



Development of Metrics



Recreation	Potential impacts to recreational activities including in-river and shoreline activities
Other Environmental Factors	Other environmental considerations, such as impacts to air quality, or aquatic, wetland, riparian, or terrestrial habitats
Socioeconomics	Potential impacts to socioeconomic conditions in regions within or outside of the Basin as a result of implementing the option



Development of Metrics

Example recreation criterion: access to boat launching

Technical Report D — System Reliability Metrics

8.0 Recreational Resources Metrics

The recreational resources attributes of interest are:

- Shoreline public use facilities
- River and white water boating
- Other recreation attributes
- Socioeconomic impacts related to recreation

8.1 Metrics for the Shoreline Public Use Facilities Attribute of Interest

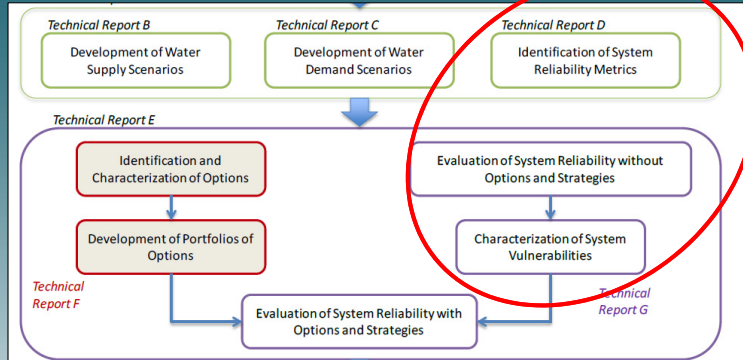
Access to boat launch ramps and marinas is directly related to reservoir water levels. CRSS calculates water levels for all major Basin reservoirs, so access to shoreline facilities can be evaluated directly with CRSS output. Low reservoir levels can also limit reservoir boating navigation and affect ferry service. Table D-7 summarizes the metrics for shoreline access.

TABLE D-7
Attribute of Interest: Shoreline Public Use Facility

Location ¹	Metric Type	Quantitative Method	Reference Value ² (feet msl)
Flaming Gorge			
Firehole Boat Ramp			6,019
Cedar Springs Marina			6,018
Antelope Flat, Anvil Draw, Buckboard, Sheep Creek, Squaw Hollow Boat Ramps			6,015
Lucerne Valley Marina			6,010
Mustang Ridge and Upper Marsh Creek Boat Ramps			6,000
Lucerne Valley Boat Ramp			5,994
Blue Mesa			
Ponderosa Boat Ramp			7,468
Stevens Creek Boat Ramp			7,462
Lake Fork Marina and Boat Ramp			7,440
Iola and Elk Creek Boat Ramps			7,433
Navajo	Quantitative	Physical Constraint	
Arboles Boat Ramp			6,025
Sims Mesa Boat Ramp			6,000
Pine Boat Ramp			5,997
Lake Powell			
Hite Public Boat Ramp			3,620
Castle Rock Cut			3,613
Antelope Point Public Boat Ramp			3,588
Wahweap, Stalaine, Bull Frog Low Water Alternative, Halls Crossing Ramps			3,560
Wahweap, Antelope Point, Bull Frog, Halls Crossing Marinas			3,555



Development of Metrics



Recreation	Potential impacts to recreational activities including in-river and shoreline activities
Other Environmental Factors	Other environmental considerations, such as impacts to air quality, or aquatic, wetland, riparian, or terrestrial habitats
Socioeconomics	Potential impacts to socioeconomic conditions in regions within or outside of the Basin as a result of implementing the option



Development of Metrics

9.2 Metrics for Aquatic and Riparian Habitat Attribute of Interest

At some locations of interest, specific habitat needs have not been expressed in terms of flow recommendations for endangered fish recovery. Nonetheless, there is interest in examining how aquatic and riparian habitat for species not currently threatened or endangered may change with time under varying future scenarios. Although flow is not the only variable that influences changes to the aquatic and riparian habitat, it is the main output variable of CRSS. The flow conditions represent an indirect measurement of how the habitats could function in the future. Metrics for this attribute of interest were developed under each of the following groups:

- Instream flow rights
- Cottonwood recruitment conditions
- Flow-dependent ecological systems

Flow-Dependent Ecological Systems			
Yampa River near Maybell, CO	Quantitative	Estimated Condition	Spring peak volumes ranging from 369–1,459 kaf and summer through winter base flows ranging from 7.1–73 kaf, depending on hydrologic year type ^a
Little Snake River near Lily, CO			Spring peak volumes ranging from 100–531 kaf and summer through winter base flows ranging from 0.36–33.7 kaf, depending on hydrologic year type ^a
Yampa River at Deerodge Park, CO			Spring peak volumes ranging from 458–1,994 kaf and summer through winter base flows ranging from 7.1–118 kaf, depending on hydrologic year type ^a
White River near Watson, UT			Spring peak volumes ranging from 120–504 kaf and summer through winter base flows ranging from 12.3–36.9 kaf, depending on hydrologic year type ^a

Example environmental criterion: flow-dependent ecological systems



Response to Specific TCAC Comments

1. Quality of Life

- **Cultural, Historic, and Aesthetic Values**
- **Socioeconomic Impact**

2. Environmental Protection

- **Ecosystem Protection**
- **Carbon Footprint**



Quality of Life -Cultural, Historical, and Aesthetic Values

- **Farmland – quantify?**
- **Separate out cultural, historical, and aesthetic: use 8-10 criteria – may be too much overlap**
- **Aesthetic: bosque, trees, in-stream flows, birds, vegetation diversity, green space, property values, etc. – all can be quantified**
- **Environmental justice – this is site-specific and would be considered later**



First Cast a Broad Net to Capture Cultural, Historical, and Aesthetic Values

- 1. It is expected that no cultural, political, ethnic, regional or tribal group will perceive inequalities in costs and benefits of the project and some are expected to support it**



- 5. It is expected that some cultural, political, ethnic, regional or tribal groups perceive inequalities in costs and benefits of the project and strongly oppose the project and/or opponents outnumber supporters**



Quality of Life - Socioeconomic Impact

- Consider calling it “Economic Impacts”**
- The current description does not cover all socioeconomic impacts**
- Consider direct and indirect market impacts, non-market effects**



Socioeconomic Impact – Consider 1997 Criteria

Level	Level of Support for Socioeconomic Benefits and Public Amenities
1.	Socioeconomic benefits including industrial and residential growth, provision of infrastructure benefits, and support for amenities such as golf courses, greenbelts, parks, and landscaping are fully supported in all areas of the City.
1.5	Intermediate between Levels 1 and 2.
2.	Infrastructure needs are met and some growth is supported; perceived potential of shortages may curtail growth, but appropriate levels of public amenities are still supported.
2.5	Intermediate between Levels 2 and 3.
3.	There is adequate supply for maintaining existing levels of amenities and industrial development, but inadequate to support growth and development.
3.5	Intermediate between Levels 3 and 4.
4.	There is inadequate supply for most public amenities in the City such as public park growth, new greenbelts, or public golf courses; some infrastructure curtailment is required.
5.	There is inadequate supply for public amenities, infrastructure curtailment is required.



Socioeconomic Impact – Revised Criteria

- 1. Socioeconomic benefits including industrial and residential growth, and support for recreational opportunities and amenities such as parks and landscaping are fully supported throughout the service area**



- 5. There is inadequate supply for recreational opportunities and amenities such as parks and landscaping**



Potential Metrics for Socioeconomic Impacts - Examples

Remember: all portfolios will be designed to meet the projected demand

- ***Number of jobs*** – increase or decrease
- ***Recreation*** – increase in *shoreline length* from storing additional native water
- ***New surface-water storage*** – can create *additional areas* of aesthetically-pleasing water features
- ***Storm-water capture*** – *additional areas* new surface-water feature
- ***Importation*** – *increased river flows*



Environmental Protection - Ecosystem Protection

- **Protection of existing resources**
- **Include other areas and issues outside of the just the river corridor**
- **Consider ecosystem services**



Option: Consider as Ecosystem Services

1. **Provisioning – benefits derived from nature (i.e. drinking water)**
 2. **Regulating – water purification, erosion and flood control, etc.**
 3. **Cultural – recreation, etc.**
 4. **Supporting – hydrologic cycle, photosynthesis, etc.**
- **Impacts would be measured as increases or decrease**



Option: Consider the 1997 Criteria

- **Population or habitat of sensitive wildlife species**
- **The bosque and valley**
- **Rio Grande**
- **San Juan river system**
- **Recreation and open space (Heron and Abiquiu)**



Solution: Modify our Existing Criteria

1. Expected to increase habitat and bosque area, and/or improve the local ecosystem, the Rio Grande, and/or the aquifer in the Middle Valley



5. May decrease the habitat and bosque area, and/or impact the local ecosystem, the Rio Grande, and/or the aquifer in the Middle Valley

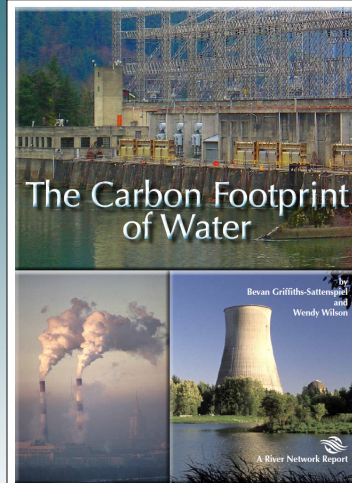
Potential Metrics for Ecosystem Impacts - Examples

Remember: all portfolios will be designed to meet current permitting requirements that do not allow ecosystem degradation

- Storm-water capture recharge basin creates ***additional area*** of bosque and/or wetlands
- New surface-water storage creates ***additional habitat area*** for birds and aquatic animals
- ***Additional habitat area*** created by increasing shoreline length from additional native water storage

Environmental Protection - Carbon Footprint (Energy Usage)

Criteria are now expressed in terms of kilowatt-hours/acre-foot (kWh/ac-ft) of water produced from low (1) to high (5)



 Albuquerque Bernalillo County
Water Utility Authority

Other Comments

- **Compliance with local, state, and federal regulations – inherent in any permitted solution**
- **Water quality – inherent in any permitted solution**

 Albuquerque Bernalillo County
Water Utility Authority

Conclusions

1. The project team will rank the alternatives and present them to the TCAC
2. No alternatives will be cut from the list
3. This portion of the analysis is mostly quantitative, but still includes some qualitative elements
4. Quantitative metrics will be developed as needed



Category	Criteria	Ranking Guide				
Evaluation Categories		1	2	3	4	5
Examples						
Quality of Life	Cultural, Historical and Aesthetic Values	It is expected that no cultural, political, ethnic, regional or tribal group will perceive inequalities in costs and benefits of the project and some are expected to support it	It is expected that no cultural, political, ethnic, regional or tribal group perceives inequalities in costs and benefits of the project	It is expected that few cultural, political, ethnic, regional or tribal groups may perceive inequalities in costs and benefits of the project but it is expected that supporters outnumber opponents	It is expected that some cultural, political, ethnic, regional or tribal groups perceive inequalities in costs and benefits of the project and may identify the alleged inequalities in cost bearing or distribution of benefits	It is expected that some cultural, political, ethnic, regional or tribal groups perceive inequalities in costs and benefits of the project and strongly oppose the project and/or opponents outnumber supporters
	Socioeconomic Impact	Adequate supply to support socioeconomic benefits including industrial and residential growth, support for recreational opportunities, and amenities such as parks and landscaping are fully supported throughout the service area	Adequate supply to support some growth and development while also supporting recreational opportunities and public amenities such as parks and landscaping	Adequate supply for recreational opportunities and public amenities such as parks and landscaping, but inadequate supply to support growth and development	Inadequate supply for full recreational opportunities and some public amenities such as parks and landscaping	Inadequate supply for recreational opportunities and amenities such as parks and landscaping
Environmental Protection	Ecosystem Protection	Expected to increase habitat and bosque area, and/or improve the local ecosystem, the Rio Grande, and/or the aquifer in the Middle Valley	May slightly increase habitat and bosque area, and/or improve the local ecosystem, the Rio Grande, and/or the aquifer in the Middle Valley	Expected to have no impacts to the habitat and bosque area, nor the local ecosystem, the Rio Grande, and/or the aquifer in the Middle Valley	May slightly decrease the habitat and bosque area, and/or impact the local ecosystem, the Rio Grande, and/or the aquifer in the Middle Valley	May decrease the habitat and bosque area, and/or impact the local ecosystem, the Rio Grande, and/or the aquifer in the Middle Valley
	Carbon Footprint	Expected to have minimal energy requirements, <15,000 kWh/AF, and result in a minimal carbon footprint	Expected to have low energy requirements, 15,000 to 30,000 kWh/AF, and result in a low carbon footprint	Expected to have moderate energy requirements, 30,001 to 60,000 kWh/AF, and result in a moderate carbon footprint	Expected to have high energy requirements, 60,001 to 90,000 kWh/AF, and result in a high carbon footprint	Expected to have significant energy requirements, >90,001 kWh/AF, and result in a significant carbon footprint