Treasure Valley Future Water Demand Study

Treasure Valley

CAMP Advisory Committee Meeting

July 30, 2010

IWRIME

Presentation Summary

- Project Background
- Data Collection & Data Gaps
- Basin Understanding
- Approach
  - Methodology

    Urban: DCMI, Domestic Irrigation, Compass. Land Use

    Ag: IDC, ET, IE, Water Year Type, Ranges of Result
- Discussion Points

Project Background

- CAMP

  Purpose: Investigate strategies and develop plans which will lead to sustainable water supplies and optimum use of the water resources

  Approach: A series of studies: water demand, climate change, modeling, alternatives analysis, etc.

- Water Demand Studies
  - Treasure Valley Water Demand Study
  - Rathdrum Prairie Water Demand Study

Scope of Work for TV Demand Study

- Purpose
  - Assess current water-use conditions and forecast future water demand over a 50 year period in 10 year increments
- Tasks
  - Task 1 - Estimate future urban water demand using 50 year population projections
  - Task 2 – Estimate agricultural water demand
  - Task 3 - Qualitative assessment of environmental and water quality needs

Deliverables

- Conceptual framework and methodology
- Water demand memorandum
- Presentations
- Status reports

Focus: Demand Study
Not Water Supply Planning

- Purpose is to estimate water demand only
- Demand study is one of the many components of the CAMP process
- Water supply planning is not part of the current study and will be addressed in the next phase

Project Team

Based on Idaho and CA

Idaho:

- Bryce Contor
- Julia Pierko
- John Petrovsky
- Mike Ciparsky
- R. D. Schmidt

California:

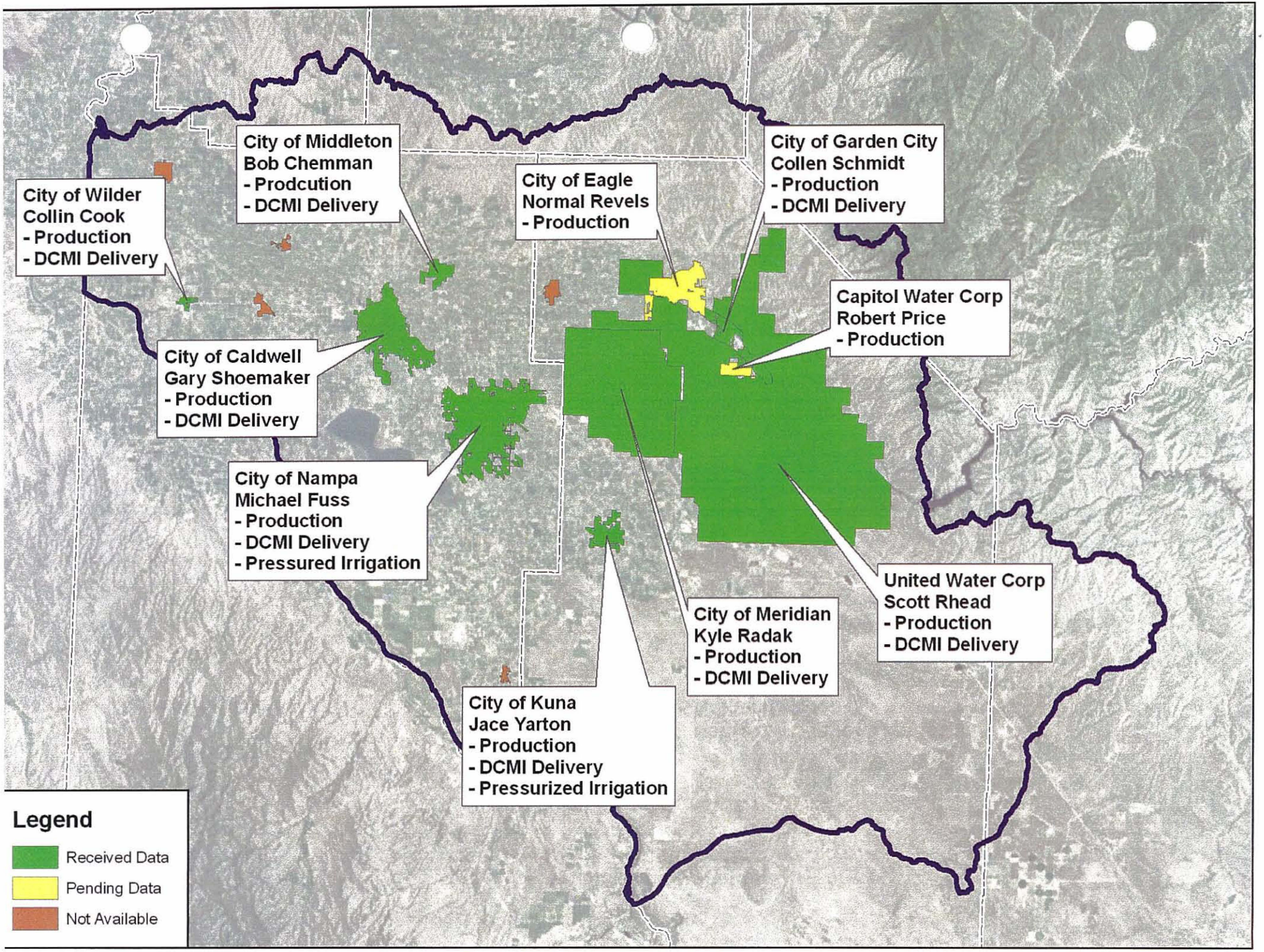
- Saquib Najmus
- Elias Tijerina
- Mesut Cayar
- Jon Traum
- Roger Mann

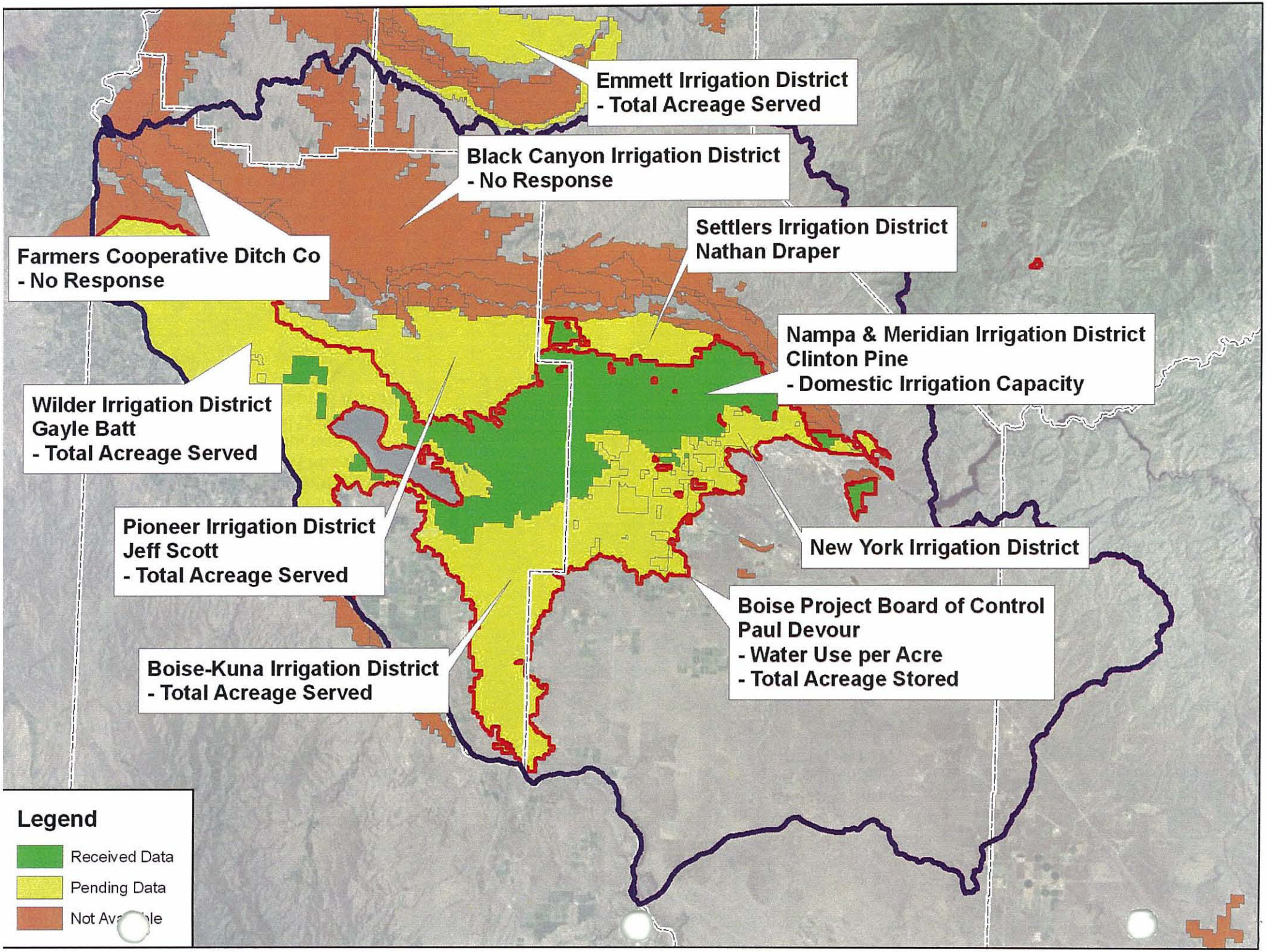
Study Methodology

Past Studies

- Treasure Valley Hydrologic Project
- Domestic, Commercial, Municipal, and Industrial Water Demand Assessment and Forecast in Ada and Canyon Counties, 2001
- Water Budget for the Treasure Valley Aquifer System for the Years 1996 and 2000
- Summary of the Treasure Valley Water Summit, 2002
- COMPASS demographic projection

Data Collection


City of Middleton
Bob Chemman
- Prodcution
- DCMI Delivery
City of Wilder
Collin Cook
- Production
- DCMI Delivery
City of Eagle
Normal Revels
- Production
City of Garden City
Collen Schmidt
- Production
- DCMI Delivery
Capitol Water Corp
Robert Price
- Production
City of Caldwell
Gary Shoemaker
- Production
- DCMI Delivery
City of Nampa
Michael Fuss
- Production
- DCMI Delivery
- Pressured Irrigation
City of Meridian
Kyle Radak
- Production
- DCMI Delivery
United Water Corp
Scott Rhead
- Production
- DCMI Delivery
City of Kuna
Jace Yarton
- Production
- DCMI Delivery
- Pressurized Irrigation
Legend
Received Data
Pending Data
Not Available


Emmett Irrigation District
- Total Acreage Served
Black Canyon Irrigation District
- No Response
Settlers Irrigation District
Nathan Draper
Farmers Cooperative Ditch Co
- No Response
Nampa & Meridian Irrigation District
Clinton Pine
- Domestic Irrigation Capacity
Wilder Irrigation District
Gayle Batt
- Total Acreage Served
Pioneer Irrigation District
Jeff Scott
- Total Acreage Served
New York Irrigation District
Boise Project Board of Control
Paul Devour
- Water Use per Acre
- Total Acreage Stored
Boise-Kuna Irrigation District
- Total Acreage Served
Legend
Received Data
Pending Data
Not Available

Data Summary Table

2009 Water Data	Production	DCMI Delivered	Demand by Pop Est	Domestic Irrigation	Total Demand	%Loss	Population %	Calculated gpcd
City of Caldwell	5,565	5,119		-	5,565	8%	9.2%	124
City of Melba			69	-	69	-	0.1%	
City of Middleton	597			-	597	-	0.8%	163
City of Nampa	8,500	7,200		-	8,500	15%	18.2%	96
City of Parma			226	-	226	-	0.4%	
City of Wilder	190	190		-	190	0%	0.4%	105
City of Boise					47,746	-	45.7%	214
Capitol Water Corp (Boise)	2,845			-	2,845	-		
United Water Idaho (Boise)	44,901	42,648		-	44,901	5%		
City of Eagle					2,937	-	4.4%	136
Eagle Water Company	2,547				2,547	-		
United Water Idaho (Eagle)	390	335		-	390	14%		
City Of Garden City	4,342	2,808		-	4,342	35%	2.7%	335
City Of Kuna					2,668	-	2.9%	186
City of Kuna (excl. Mayfield)	2,419	1,387		637	2,419	43%		169
Mayfield Springs Water Co	249				249	-		
City Of Meridian	9,350	9,000		-	9,350	4%	13.8%	139
City Of Greenleaf			110	-	110	-	0.2%	
City of Star			1,135		1,135	-	1.2%	
City of Notus			77		77	-	0.1%	
City Subtotal	81,895	68,687	1,617	637	83,512	16%	100%	167
Rural Areas Ada Co gpcd			13,451		13,451	-		
Rural Areas Cayon Co gpcd			12,330		12,330	-		
TOTAL	163,790	137,374	16,685	1,274	25,780	16%		

Data gaps

- Incomplete data set for domestic irrigation water deliveries and acres served
- Lack of information on seed crop acreage and water delivery
- Land use maps is available only for certain year

Current Basin Understanding

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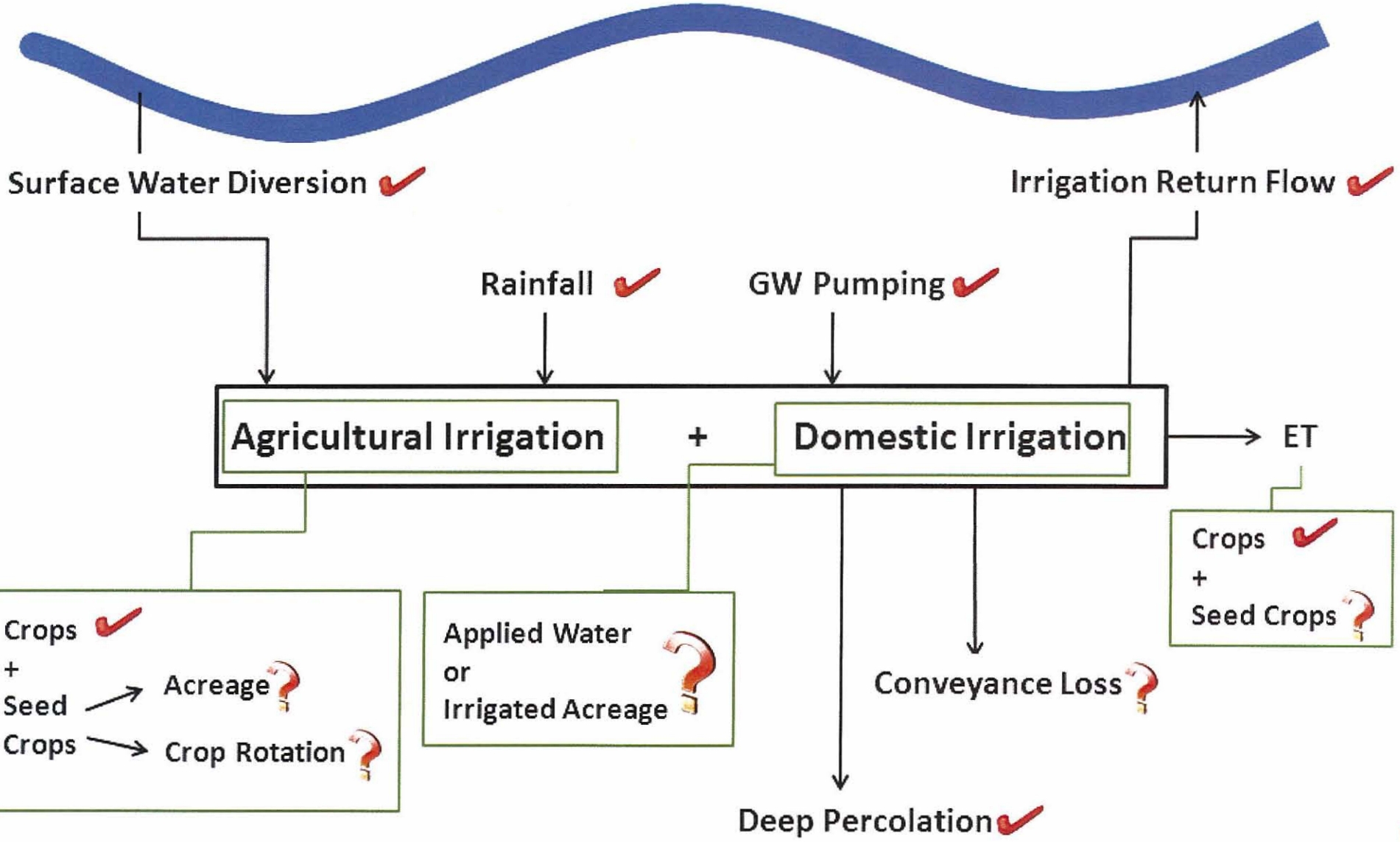
Irrigation Data Requirements



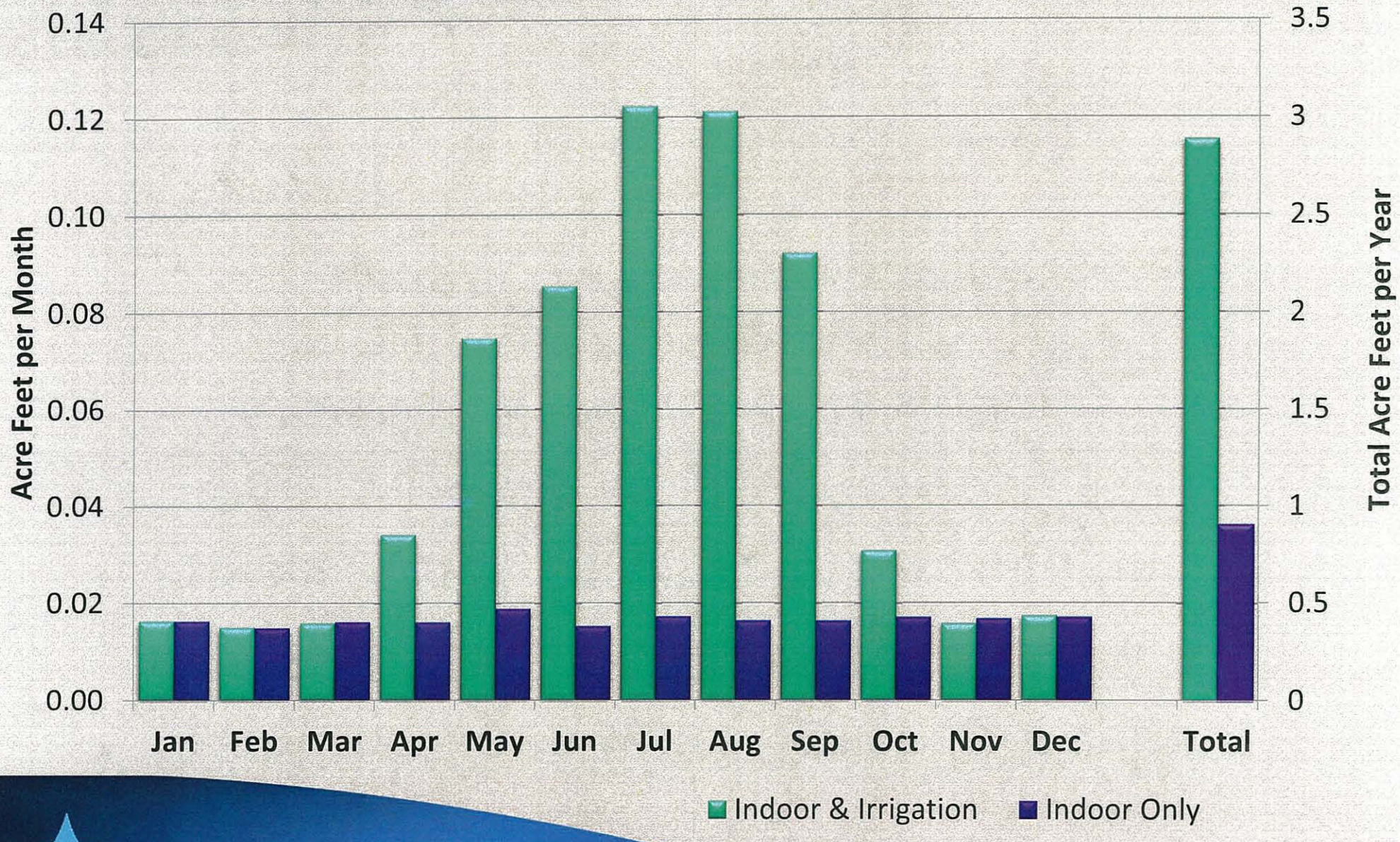
Water use

- Domestic, Commercial, Municipal, and Industrial water demand
  - Current understanding of dual system
    - Domestic water supplies directly provided by municipalities or private water producers (United Water)
    - Domestic irrigation supplied by irrigation district surface water deliveries by gravity or pressurized irrigation
    - Methods for delivery of domestic irrigation water is "on-demand" or "constant flow"
    - Deliveries are based on water rights. Rights stay with the land

Water Use

- Two seasons of water use
  - Peak domestic water use during summer months
  - Domestic irrigation estimates
    - » Boise Project (2.52 AF/acre)
    - » United Water (1.8-2.4AF/acre)
    - » Nampa-Meridian (AF/acre)

Domestic Irrigation



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Project Approach

- Establish a basin water demand for current conditions
- Project Water demand 50 years into future
  - Projections will include:
    - Existing urban water demand projection
    - Existing plans for conservation
    - Draft 2035 COMPASS demographic projection

Project Approach

- Agricultural water demand using Integrated Water Flow Model Demand Calculator (IDC Model)
- Data Elements
  - Land use distribution,
  - Crop acreage,
  - Hydrologic data,
  - Irrigation efficiency/practices,
  - Groundwater/surface water deliveries

Project Approach

- Land use and crop acreage
  - Historical land use trend in reduction of overall acreage
  - Historical crop acreage
    - Projecting the crop pattern(s) with a declining trend
  - Seed crops
    - Availability of data

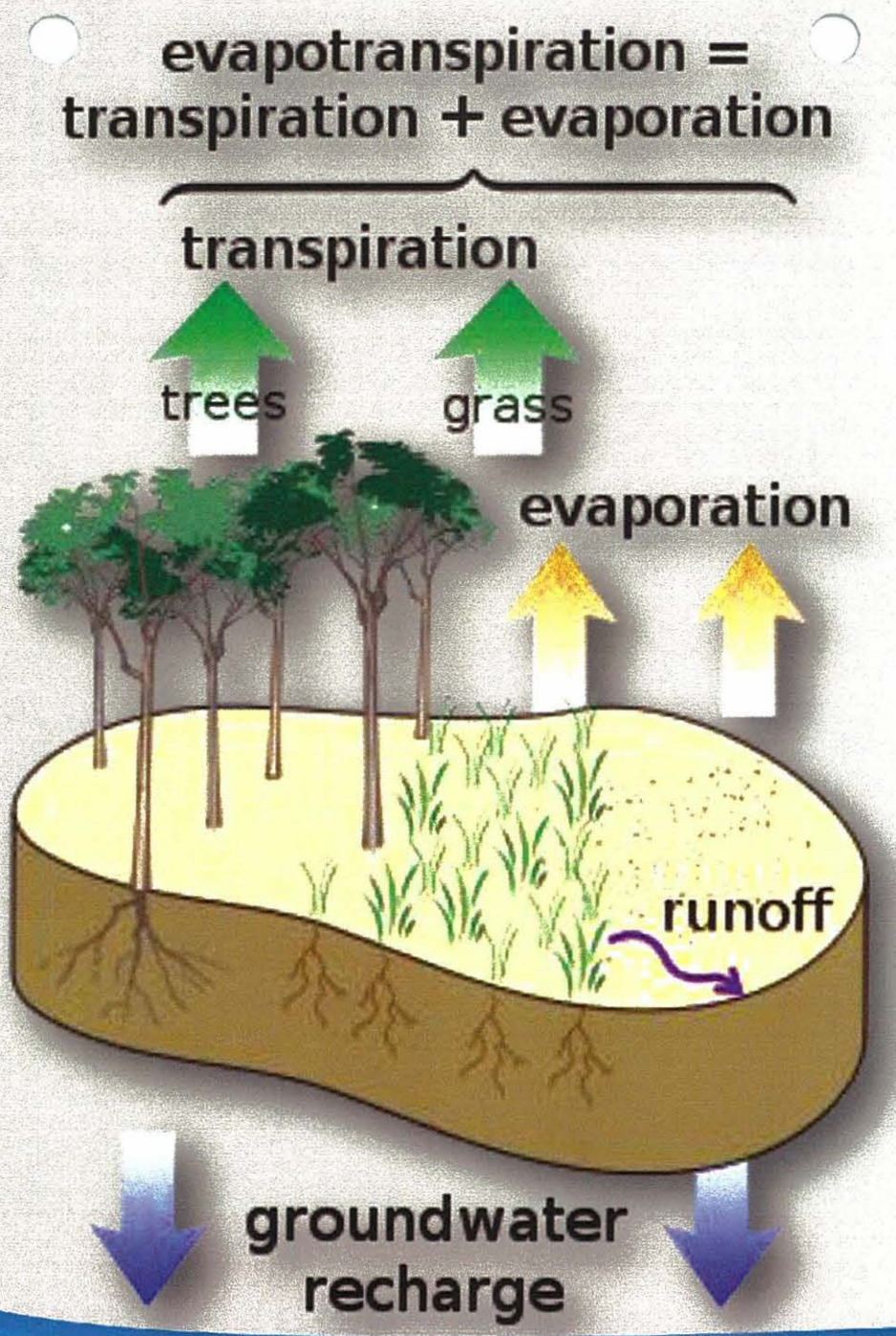
Evapotranspiration and Consumptive Irrigation Water Requirements

Consumptive Use

Water consumed through evaporation, transpiration, or incorporated into products or crops.

Evapotranspiration (ET)

water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and as a result of plant transpiration.



Irrigation Efficiencies

		Application Eff (%)
Surface Systems	Furrow	35-60
	Corrugate	30-55
	Border, level	60-75
	Border, graded	55-75
	Flood, wild	15-35
	Surge	50-55
	Cablegation	50-55
Sprinkler Systems	Stationary lateral	60-75
	Solid-set lateral	60-85
	Traveling big gun	55-67
	Stationary big gun	50-60
	Center-pivot lateral	70-85
	Moving lateral	80-87
Micro-irrigation systems	Surface drip	90-95
	Subsurface drip	90-95
	Micro-spray or mist	85-90

(Source: Sterling, R., and W. H. Neibling, 1994. Final Report of the Water Conservation Task Force. IDWR Report. Idaho Department of Water Resources, Boise)

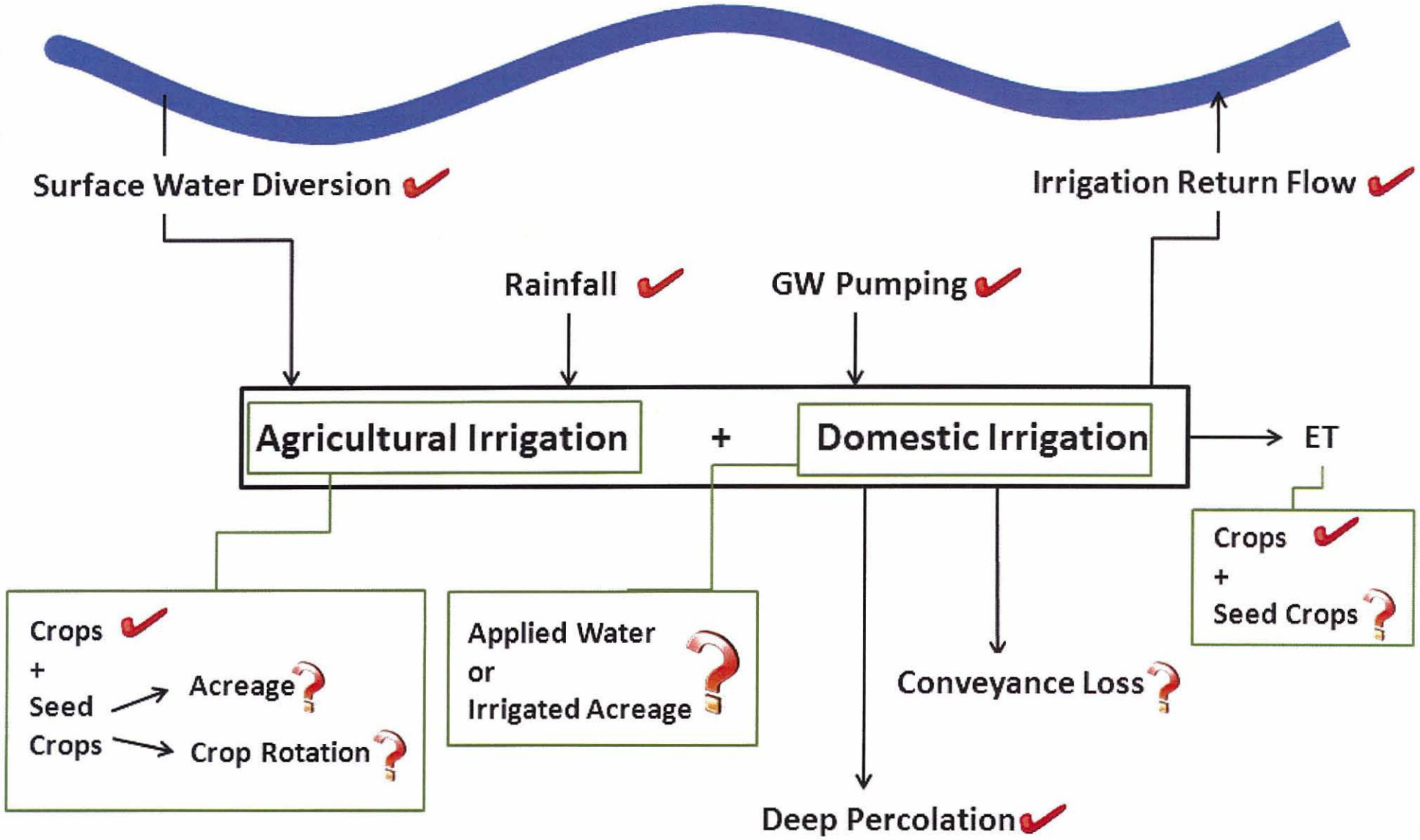
Previous Studies Comparison

Project		Year	Water Demand (AF/year)	Ag Area (Acres)	Applied Water (AF/Acre/year)
IDC	Crop Ag Eff = 60%	1994	1,438,029	361,154	3.98
	Crop Ag Eff = 50%		1,725,634	361,154	4.78
	Average		1,581,832	361,154	4.38
IDC	Crop Ag Eff = 60%	2000	1,384,390	358,229	3.86
	Crop Ag Eff = 50%		1,661,269	358,229	4.64
	Average		1,522,830	358,229	4.25
TVHP (gravity irrigated land only)		1996	1,155,500	252,000	4.59
		2000	1,209,700	269,000	4.5
DP (gravity irrigated land only)		Average 1967-1997	1,154,760	269,000	4.29

Resolving Data Gaps

- Differences in water deliveries, drainage, and losses from streams and canals
  - Overall look at how much water is diverted into the basin and how much is used by crops and other beneficial uses of the water (recharge)

Irrigation Data Requirements



Discussion Topics from the Individual Meetings with Advisory Committee Members

Conservation

- All planned conservation provided by agencies is included in demand calculation
- Unplanned conservation or potential conservation is part of future water supply planning, which is out of scope

Demand and Consumptive Use

- Agricultural Water Demand = CUAW/I.E.
- Urban Water Demand = Indoor Demand + Outside Irrigation Demand
- All of the indoor demand is not consumptively used, but may available as a new source of water, such as recycled water, which can be considered in water supply planning

Water Rights and Demand

- Water rights and demand needs to be integrated during water supply planning

Comparative Analysis of Water Rights and Water Demand