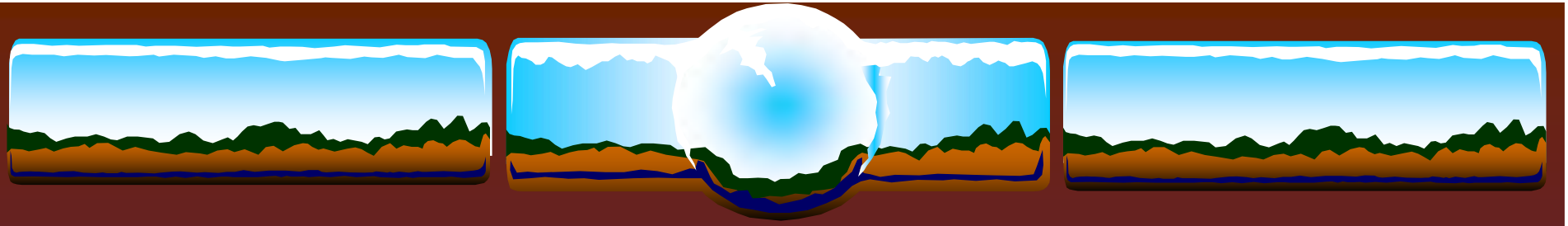
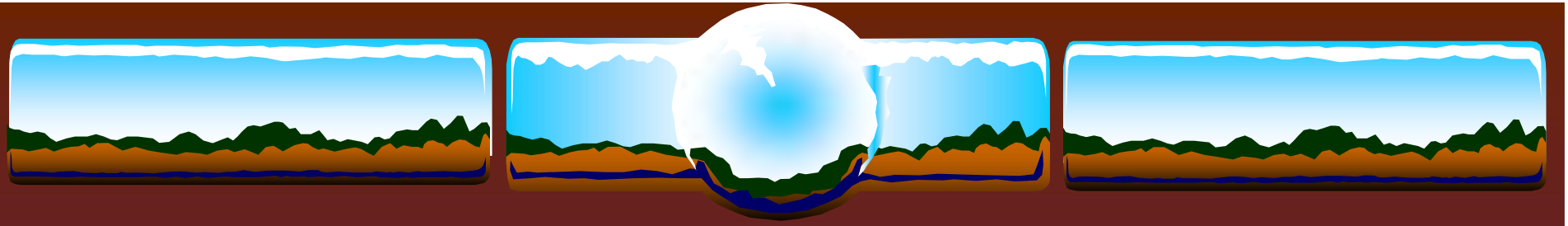


INCIDENTAL RECHARGE

Tony Olenichak
Program Manager
Water District #1
tony.olenichak@idwr.idaho.gov



DEFINITION

Incidental Recharge is the ground water recharge (infiltration) that occurs as a result of human activities unrelated to a recharge project, for example, irrigation and water diversion (unlined canals).

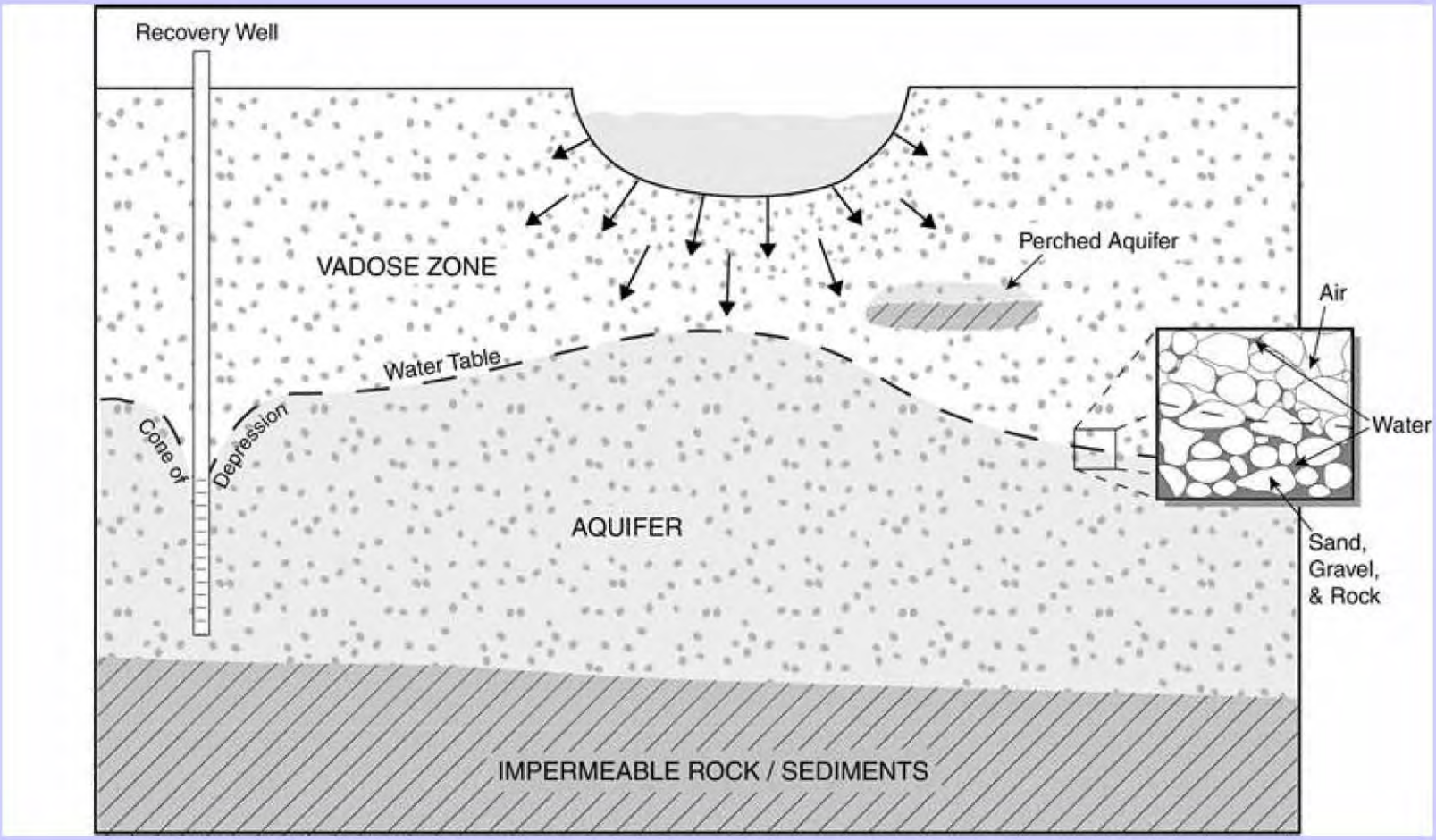
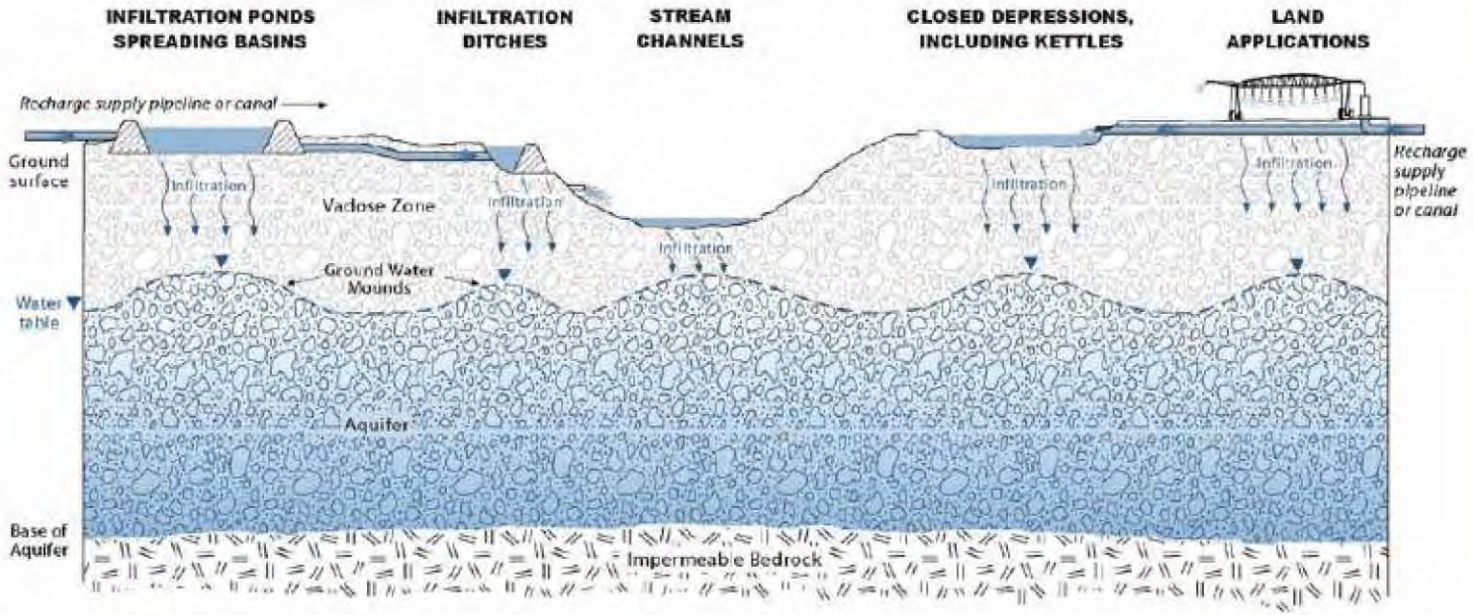
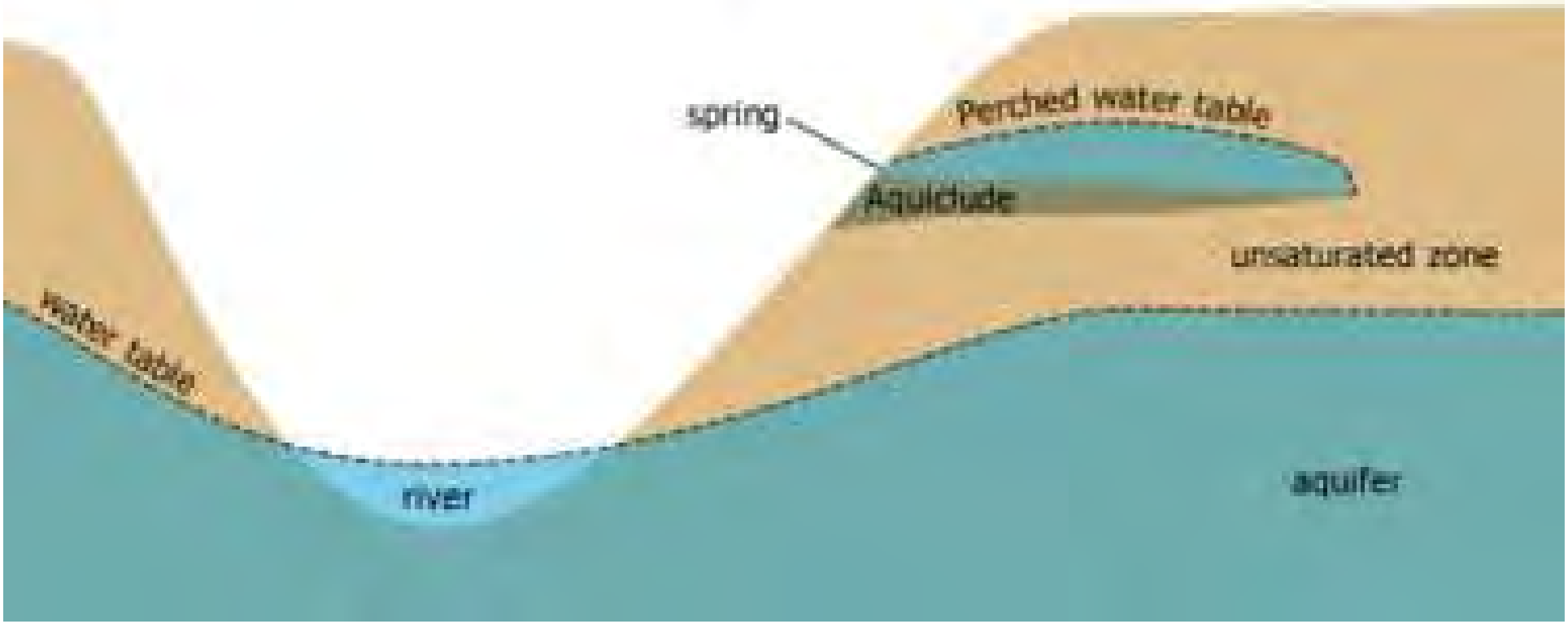

Recovery Well
VADOSE ZONE
Perched Aquifer
Air
Water Table
Water
Cone of
Depression
AQUIFER
Sand,
Gravel,
& Rock
IMPERMEABLE ROCK / SEDIMENTS

Figure VI-3 (revised)

EXAMPLES OF SURFACE INFILTRATION TECHNOLOGIES



Source: *Ralf Topper,* et. al., *Colorado Geological Survey Department of Natural Resources,* Artificial Recharge of Ground Water In Colorado - A Statewide Assessment, *2004.*


spring
Perched water table
Aquiclude
unsaturated zone
water table
river
aquifer

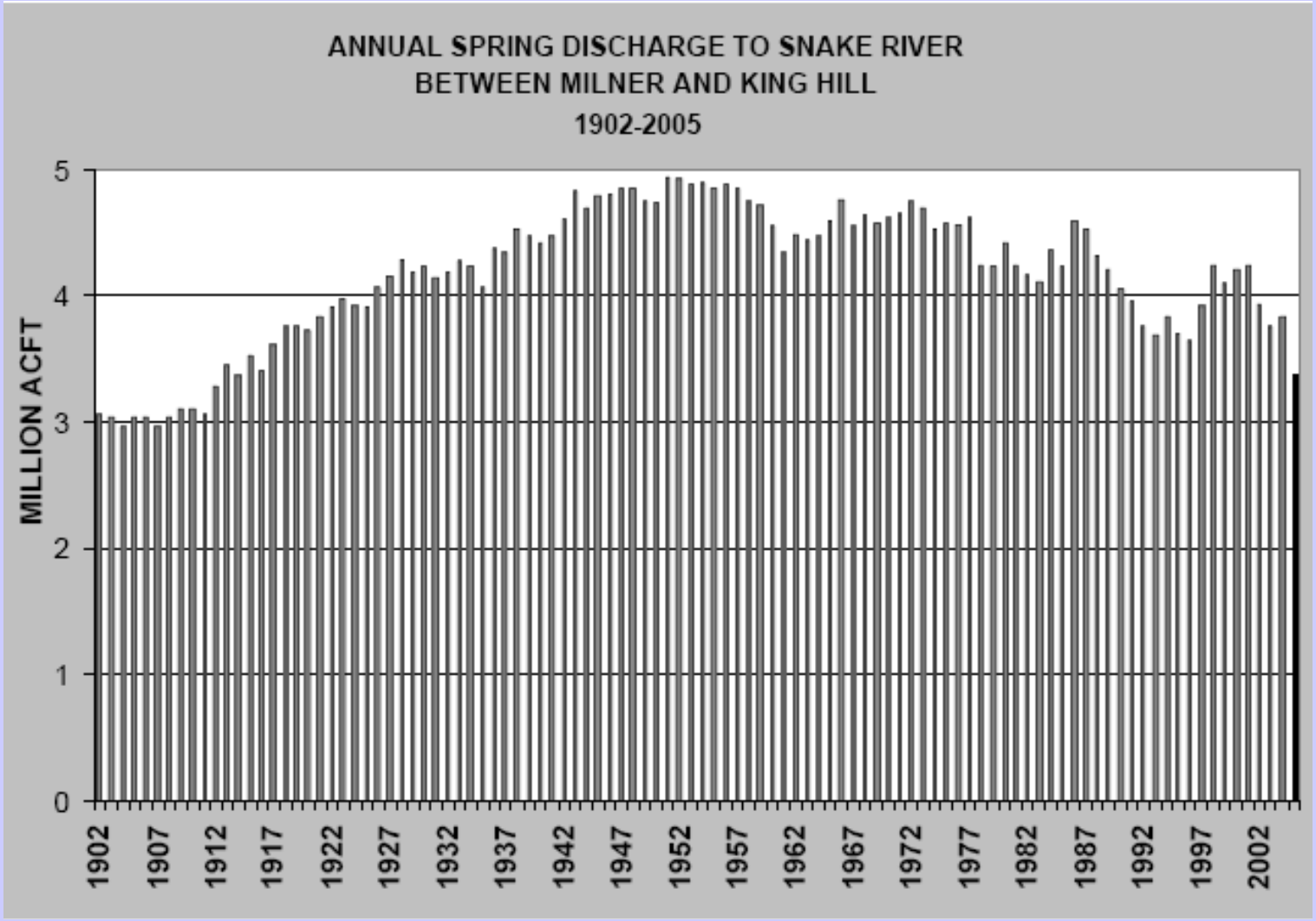
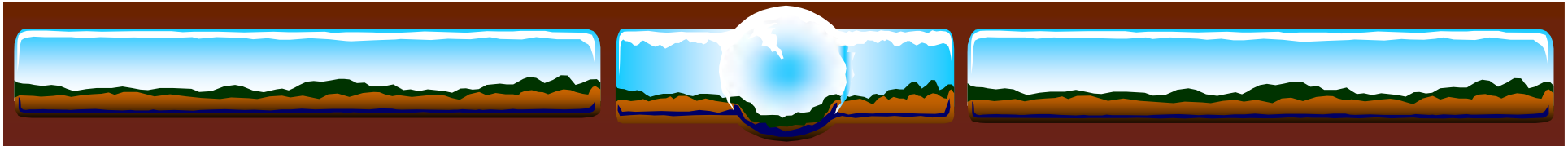

ANNUAL SPRING DISCHARGE TO SNAKE RIVER
BETWEEN MILNER AND KING HILL
1902-2005
MILLION ACFT
0
1
2
3
4
5
1902
1907
1912
1917
1922
1927
1932
1937
1942
1947
1952
1957
1962
1967
1972
1977
1982
1987
1992
1997
2002

TABLE 7. Diversions During 2006 Irrigation Year from Snake River, Dry Bed (Great Feeder Canal)

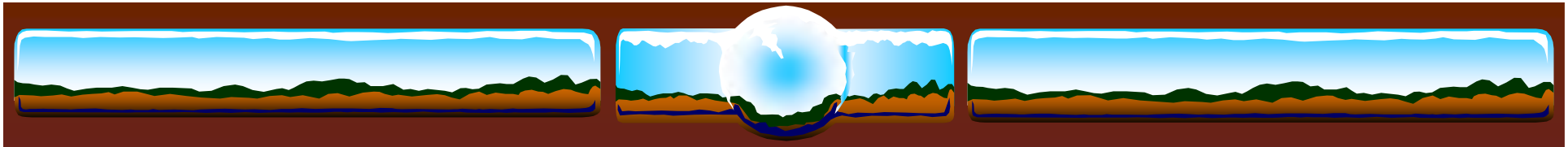
Diversion Number	Name	Total Diverted (acre-feet)		Service Area (acres)	Ac-ft/ac Diverted	
13037997	C Hickman Pump	0		10	-	
13038025	Butler Island Canal	13,342		990	13.5	
13038030	Ross & Rand Canal	1,313		170	7.7	
13038050	Steele Canal	0		140	-	
13038055	Harrison Canal	133,521		14,230	9.4	
13038065	Cheney Canal	370		130	2.8	
13038075	G Scott Pump	239		(a)	-	
13038079	J Brown Pump	19		14	1.4	
13038081	G Scott Pump	91		-	-	
13038084	Subdivision Pump	151		(a)	-	
13038085	Rudy Canal	67,207		5,530	12.2	
13038090	Lowder Canal	15,735		1,000	15.7	
13038098	Kite & Nord Canal	1,724		210	8.2	
13038110	Burgess Canal	288,753		22,200	13.0	
13038113	M Hill Pump	127		50	2.5	
13038115	Clark & Edwards Canal	22,807		1,740	13.1	
13038145	Croft Canal	331		60	5.5	
13038147	A Zaugg Pump	1		19	0.1	
13038148	G Holman Pump	0		6	-	
13038149	G Mama Pump	10		3	3.3	
13038150	East Labelle Canal	37,103		2,850	13.0	
13038151	B Grover Pump	73		25	2.9	
13038180	Rigby Canal	54,063		3,920	13.8	
13038183	K Foster Pump	114		80	1.4	
13038201	White Island Pump	370		140	2.6	
13038205	Dilts Canal	6,556	(b)	630	10.4	
13038210	Island Canal	45,687		3,760	12.2	
13038225	West Labelle & Long Island Canal	120,246		10,500	11.5	
13038305	Parks & Lewisville Canal	105,157		9,800	10.7	
13038315	North Rigby Canal	15,543		1,210	12.8	
13038331	Jefferson Hills Pump	0		110	0.0	
13038340	White Canal	1,292		110	11.7	
13038352	D Phillips Pump	7		52	0.1	
13038356	Von Baron	11		-	-	
13038360	Bramwell Canal	198		160	1.2	
13038362	Ellis Canal	701		60	11.7	
13038365	Idaho Fresh Pac Pump	619		145	4.3	
13038371	J T Jones Pump	40		(a)	-	
13038372	C Jones Pump	108		40	2.7	
13038382	W Dabell Pump	190		231	0.8	
13038384	D Stoker Pump	149		206	0.7	
13038386	J N Erickson Pump	524		177	3.0	
	TOTAL	934,600		80,708	11.6	(c)

(a) Acreage not determined
(b) Includes diversion 13038204.
(c) Does not include diversions with unknown acreage or zero amount diverted.

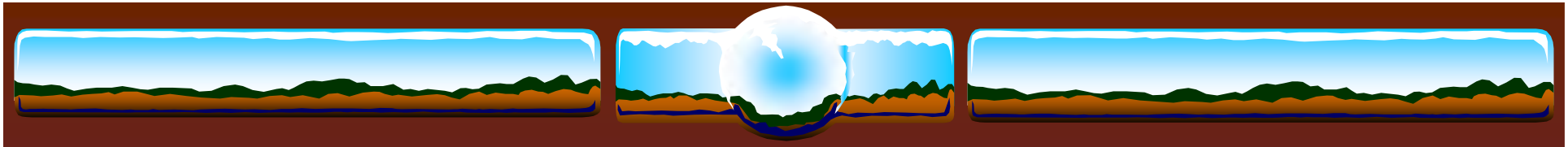


Quantification

- Precise measurement of incidental recharge would require the following:
  1) Discharge measured at the head of the canal
  2) Minus return surface-flow to the river (at end of canal)
  3) Minus crop consumptive use and evaporation (evapotranspiration)
  4) Plus precipitation utilized by crops
  5) Analysis of where the incidental recharge ends up (river, deep aquifer, shallow or perched aquifer).

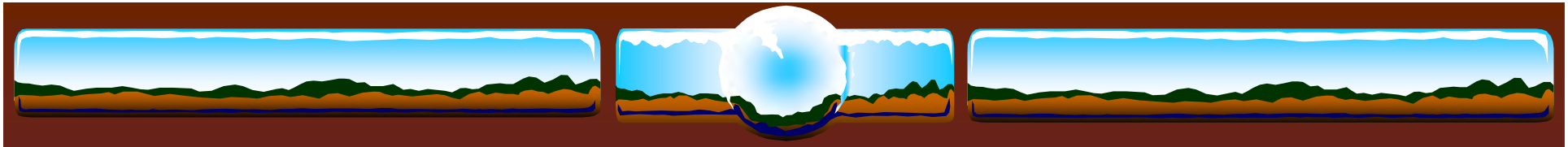


Opportunities, Risks, & Constraints



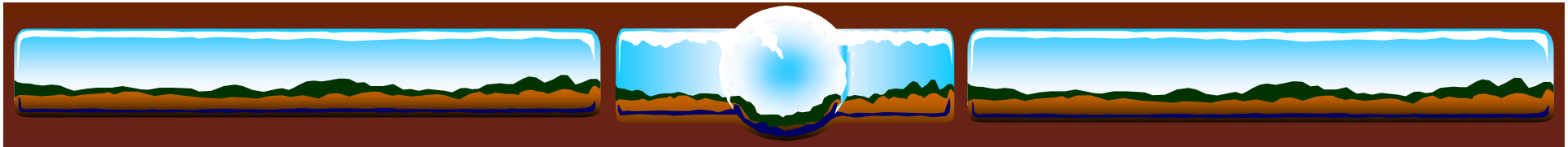
OPPORTUNITIES

- Encourage
  - Keep water running in the canals as long as possible.
- Discourage
  - lining or sealing of canals
  - conversion from flood to sprinkler irrigation
  - any other methods of water conservation



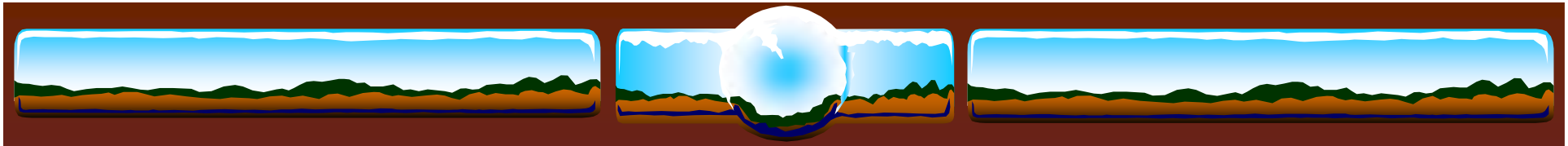
Risks

- Could result in raising local or perched aquifer levels - flooding basements and low-lying areas (mosquito habitat).
- Incidental recharge may not provide the benefit where it is intended (doesn’t reach the deep aquifer).



Constraints

- Limited by water supply and water-right restrictions.
- Winter-Water-Savings storage contracts.
- Costs to keep canals running when not irrigating.



Discussion