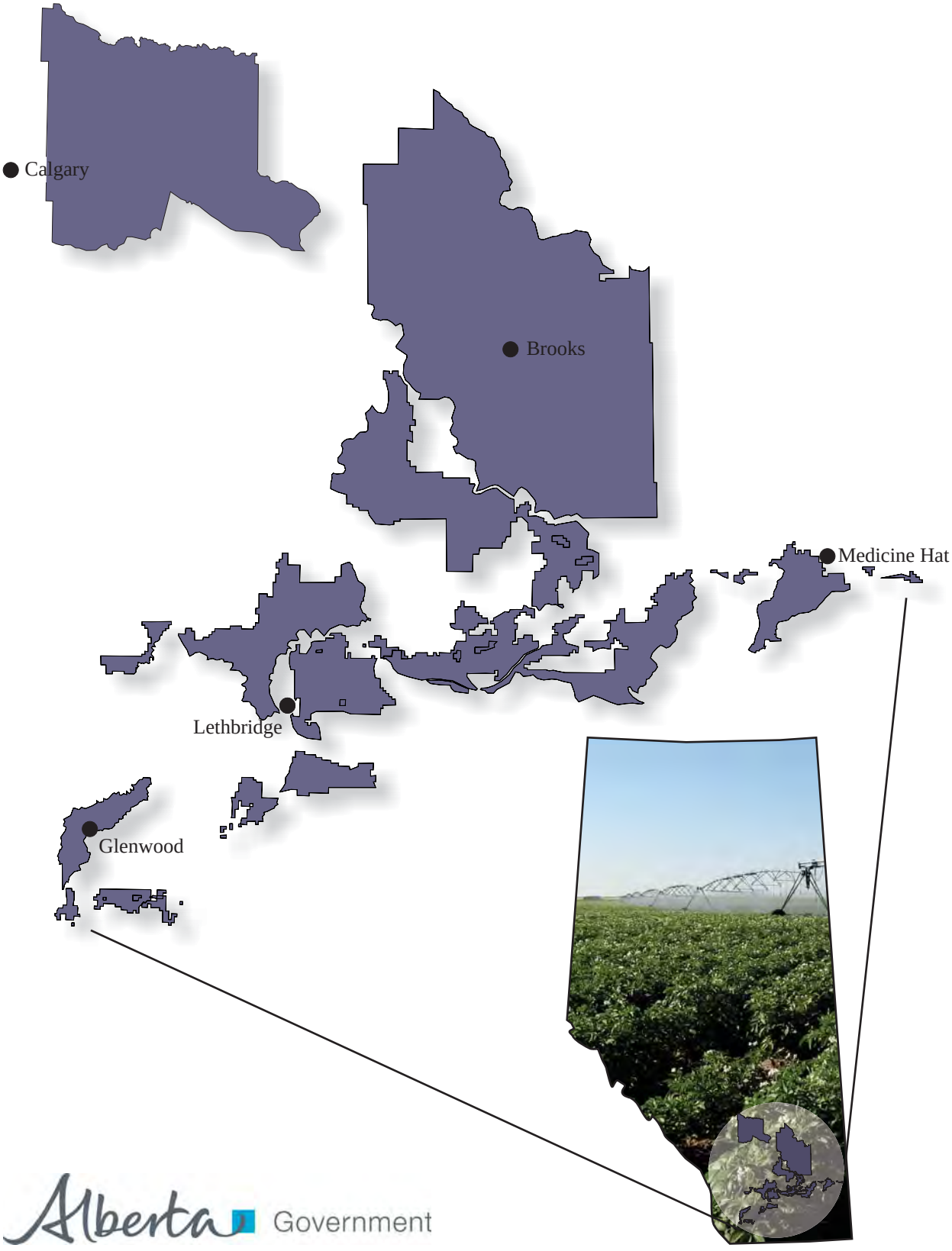
Alberta Irrigation Information
2014



Alberta Government

ALBERTA IRRIGATION INFORMATION

FACTS AND FIGURES FOR THE YEAR 2014

BASIN WATER MANAGEMENT BRANCH

IRRIGATION AND FARM WATER DIVISION

AUGUST 2015

This report is prepared by Alberta Agriculture and Forestry. The purpose of this booklet is to provide a statistical overview of irrigation information and data relating primarily to the thirteen irrigation districts situated in southern Alberta, but also includes information about irrigation across the whole province.

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Table 1. Details of Crops Grown within the 13 Irrigation Districts in 2014

CROP TYPE		AID			BRID			EID			LID			LNID			MID			MVID			RCID			RID			SMRID			TID			UID			WID			TOTAL ACRES
		acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	
		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		
CEREALS	Barley		418	1,029	16,968	512		15,629			366	273		17,486			1,792	937								5,925	2,169		17,116	1,784	762	6,163	133		3,084	1,690		8,527	3,658		**106,421**
	CPS Wheat				278			3,808						817												1,762	755		260						258	2,523		6,118	795		**17,374**
	Durum Wheat				8,850	242		143						7,502												315	136		20,832	60	503	859						220	392		**40,054**
	Grain Corn				6,308	8		9,186																					7,813	67	24	1,779						218	223		**25,626**
	Hard Spring Wheat	255			53,653	1,084		52,624						6,814			3,136	750								1,888	809		66,481	1,426	2,738	16,303	198		3,575	2,062		4,134	796		**218,727**
	Malt Barley																																		50				50		**100**
	Oats				1,828	146		2,410						303			20			16	307					163			533	25	26	165						176	270		**6,388**
	Rye							673																					90		16				135						**914**
	Soft Wheat				1,204			599						1,453															2,040		5							581			**5,882**
	Triticale	77			685	65		2,609			54			2,739			80												728		80	308									**7,425**
	Winter Wheat				6,565			1,095									245	136								1,436	615		14,147	261	630	1,102			1,829	317		795			**29,172**
FORAGES	Alfalfa - Two cuts	542			3,466	81		35,465																					10,007		252							9,020	3,344		**62,177**
	Alfalfa - Three cuts				1,118	13		1,368																		140			402		26										**3,067**
	Alfalfa Hay	320	321	340	8,327	239		1,409			500	621	200	23,298			4,236	777		587	561		781			10,038	1,000		11,918	829	700	5,974	107		3,327	1,564		1,028	771		**79,773**
	Alfalfa Silage							1,247						4,492												110			1,317		280	175									**7,621**
	Barley Silage				2,352	257		2,999						34,069			140									2,500	107		7,009	42	525	1,138			493	37		3,293	912		**55,873**
	Barley Silage (underseeded)				96			791																					1,450		55	132						796	150		**3,470**
	Brome Hay				1,211	293								711															374		121										**2,711**
	Corn Silage				5,721	19		13,569						27,264												2,140			17,671	157	767	3,890						364			**71,563**
	Grass Hay			48	848	154		8,187			195	605	80	3,547			204	50		243	255				94	635			3,483	875	587	182	125		495	243		1,817	1,047		**23,999**
	Green Feed		89	51	1,131	357		5,920									358			170	311					106			2,726	296	21	308	30		27	99			24		**12,023**
	Milk Vetch																																								**0**
	Millet							130																					61	65											**256**
	Native Pasture				292	109		2,021					25	279						532	428								4,615	289	911	18	327		2,091	1,448		1,427	1,569		**16,382**
	Oats Silage																									97			35												**132**
	Sorghum/Sudan Grass																												150			107									**257**
	Tame Pasture	284	19	555	9,518	1,259		42,160			389	375	818	4,318			1,219	519								3,722	1,078		8,431	1,562	890	2,667	1,650		772	1,212		3,397	2,392		**89,206**
	Timothy Hay				931			1,600			135			4,230												478			4,824	66	162	2,047	125		1,046	141		1,077	35		**16,896**
	Tritcale Silage																												503												**503**
OIL SEEDS	Canola				19,947	695		30,001						29,383			1,532	521		253			116			5,071	2,174		44,692	1,263	1,272	2,858	25		3,085	1,722		12,424	3,165		**159,946**
	Flax				8,595	23		14,657						2,200			480	125								341	146		9,841	365	153	446						460			**37,833**
	Mustard				373									80															306		5										**764**
SPECIALTY CROPS	Alfalfa Seed				9,475	43		18,450																																**27,968**
	Canola Seed				9,010	363		7,344																					14,651	57	56	3,745									**35,479**
	Caraway Seed																																								**0**
	Carrots							95																					34	60									55		**244**
	Catnip																												332												**332**
	Chick Peas																												257		11										**268**
	Dill																												407		21										**428**
	Dry Beans				11,520			5,009									130												31,301	25	144	3,937	9					380			**52,455**
	Dry Peas				4,017	414		4,230						220			172									98			3,896	583	699	10	19		265	245		651	170		**15,689**
	Faba Beans				2,348			2,863																		128			3,110		78	160			293			125			**9,106**
	Fresh Corn (sweet)				287			45																					825			1,621									**2,778**
	Fresh Peas				1,662	132		20																					1,570			2,438									**5,822**
	Grass Seed				143	61											236	181																	135				5		**761**
	Hemp				4,143	253		634									260									283			13,243	21	184										**19,020**
	Lawn Turf				123									792										12					294			81			15			1,998	680		**3,995**
	Lentils																												835		27										**861**
	Market Gardens				41	46		47						48												50			252			7			3			60	244		**798**
	Mint				340			250																					3,635	10											**4,235**
	Nursery				8			432						7												43			312		10	14						582	1,053		**2,461**
	Onions																															835										**835**
	Potatoes				11,483	44		2,703						1,158															14,177	65	50	10,898			5			130			**40,713**
	Pumpkins																															401										**401**
	Safflower																																								**0**
	Seed Potatoes							1,061																					72			363						702			**2,198**
	Small Fruit																20												83	7			10									**120**
	Soy Beans				9			781																					3,273		67	145									**4,275**
	Sugar Beets				9,256	145		697						2,128															8,057	175	36	3,830									**24,323**
	Sunflower				724			2,054						31															117			347									**3,273**
OTHER	Miscellaneous	11			61	116								3,927										71		42			1,534	866	267	245	88		61	48			35		**7,373**
	Non Crop	122	4	39					124		97	45	70																5	399	523		66					11	91		**1,596**
	Summer Fallow				37	297			718								46												125	144	891	140	108						90		**2,672**
	Unknown (not reported)						22,487									423																	4,405				76		12,002	**39,317**
Total acres		**1,611**	**851**	**2,062**	**224,952**	**7,470**	**22,487**	**297,015**	**842**	**0**	**1,736**	**1,919**	**1,193**	**179,296**	**0**	**423**	**14,305**	**3,995**	**0**	**1,801**	**1,862**		**897**	**0**	**177**	**37,511**	**8,989**	**0**	**362,254**	**11,845**	**14,575**	**75,838**	**3,020**	**4,405**	**21,044**	**13,351**	**0**	**60,587**	**22,016**	**12,002**	**1,412,331**
		4,524			**254,909**			**297,857**			**4,848**			**179,719**			**18,300**			**3,663**			**1,074**			**46,500**			**388,673**			**82,263**			**34,395**			**94,605**			**1,412,331**

Table 2. Summary of Crops Grown within the 13 Irrigation Districts in 2014

CROPS	IRRIGATION DISTRICTS													TOTAL ACRES
	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	
Cereals	1,779	98,396	88,776	693	37,114	7,096	322	0	15,973	138,449	27,010	15,523	26,953	**458,084**
	39.3%	38.6%	29.8	14.3%	20.7%	38.8%	8.8%	0.0%	34.4%	35.6%	32.4%	45.1%	28.5%	**32.4%**
Forages	2,569	37,792	116,866	3,943	102,208	7,502	3,088	875	22,151	84,453	19,002	12,995	32,463	**445,907**
	56.8%	14.8%	39.2%	81.3%	56.9%	41.0%	84.3%	81.5%	47.6%	21.7%	22.8%	37.8%	34.3%	**31.6%**
Oil Seeds	0	29,633	44,658	0	31,663	2,658	0	116	7,732	57,898	3,329	4,807	16,049	**198,543**
	0%	11.6%	15.0%	0.0%	17.6%	14.5%	0.0%	10.8%	16.6%	14.9%	4.0%	14.0%	17.0%	**14.1%**
Specialty Crops	0	66,090	46,715	0	4,384	999	253	12	602	103,118	28,870	961	6,835	**258,839**
	0.0%	25.9%	15.7%	0.0%	2.4	5.5%	6.9%	1.1%	1.3%	26.5%	34.7%	2.8%	7.2%	**18.3%**
Other*	176	22,998	842	212	4,350	46	0	71	42	4,755	5,052	109	12,305	**50,958**
	3.9%	9.0%	0.3%	4.4%	2.4%	0.3%	0.0%	6.6%	0.1%	1.2%	6.1%	0.3%	13.0%	**3.6%**
TOTAL ACRES	**4,524**	**254,909**	**297,857**	**4,848**	**179,719**	**18,300**	**3,663**	**1,074**	**46,500**	**388,673**	**83,263**	**34,395**	**94,605**	**1,412,331**

Note: *Other includes unknown or not reported crops

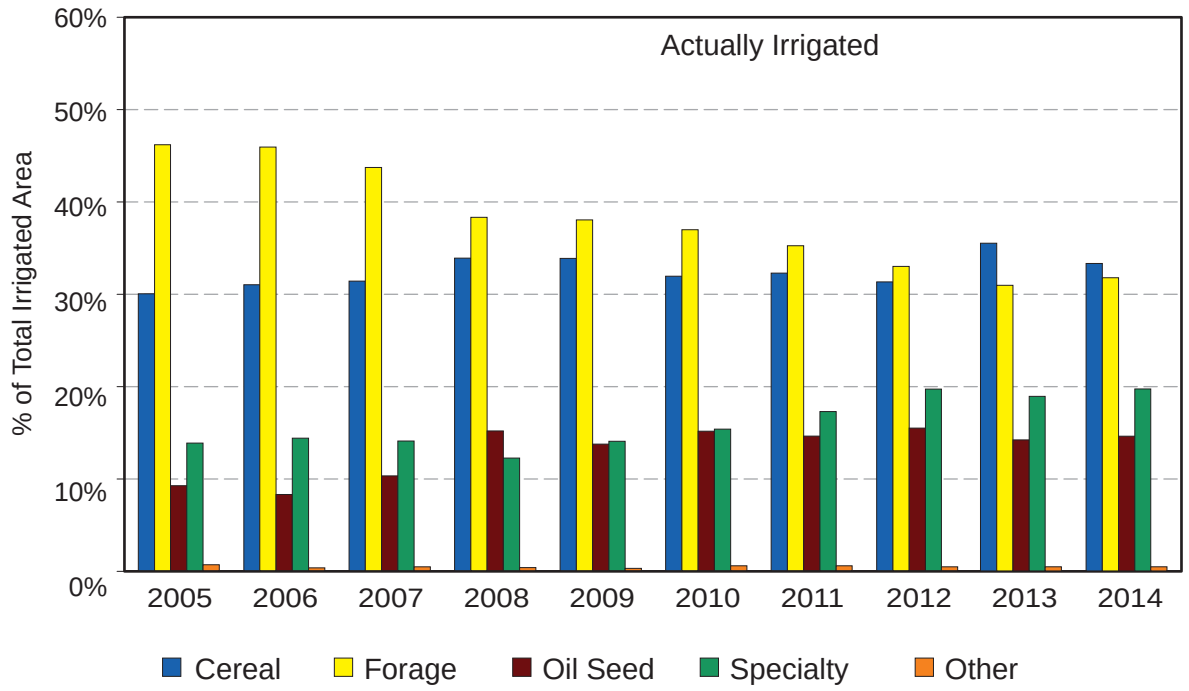


Figure 1. Irrigated Crops within the 13 Irrigation Districts in Southern Alberta (2005 - 2014)

Note: Starting in 2011, acreage data for canola seed (canola grown for seed production) was collected. It is included in the specialty crop category.

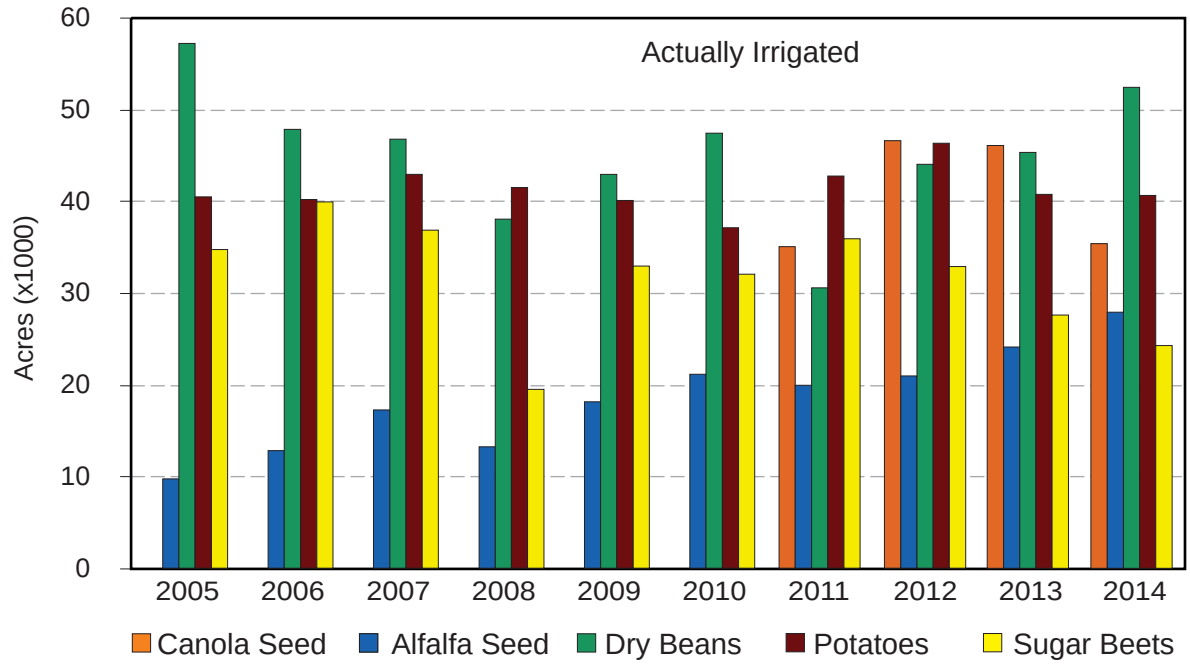


Figure 2. Acres of Five Major Irrigated Specialty Crops – Canola Seed, Alfalfa Seed, Dry Beans, Potatoes and Sugar Beets within the 13 Irrigation Districts in Southern Alberta (2005 - 2014)

Note: Starting in 2011, acreage data for canola seed (canola grown for seed production) was collected. It is included in the specialty crop category.

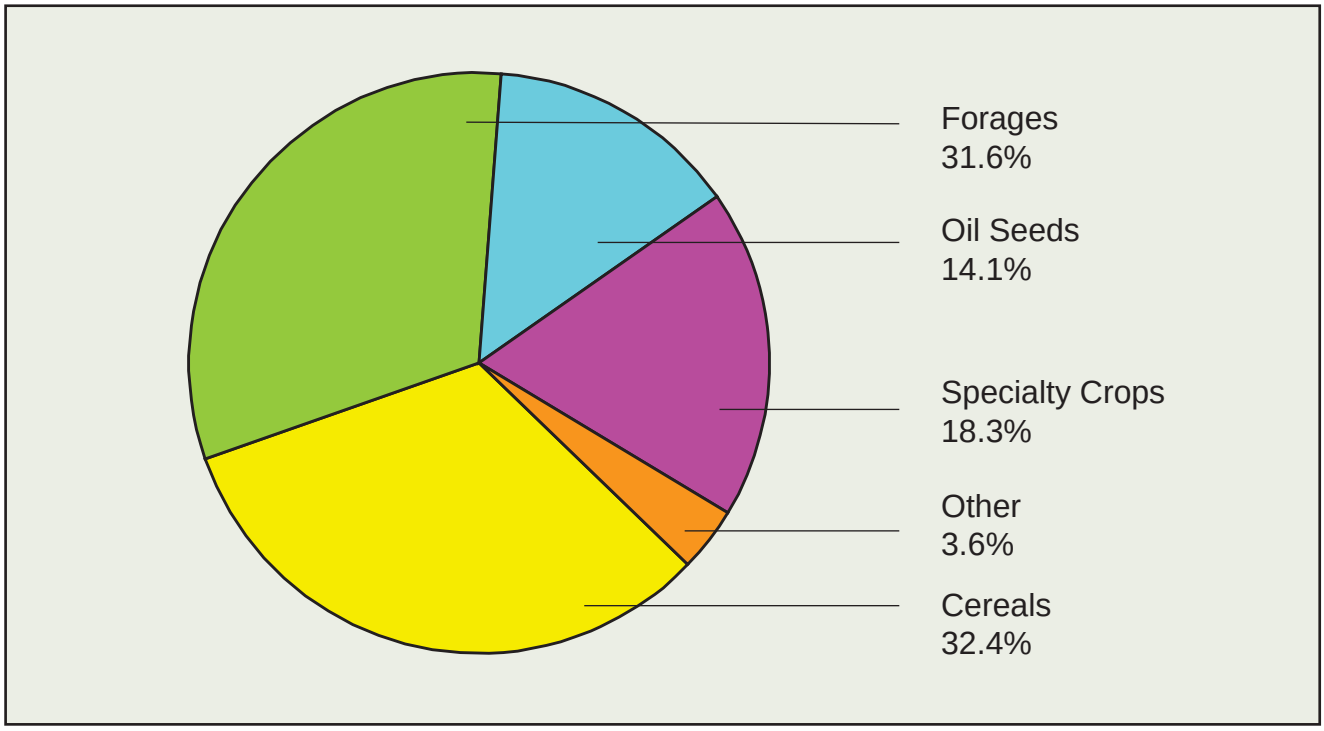


Figure 3. Crops Grown within the 13 Irrigation Districts in Southern Alberta in 2014

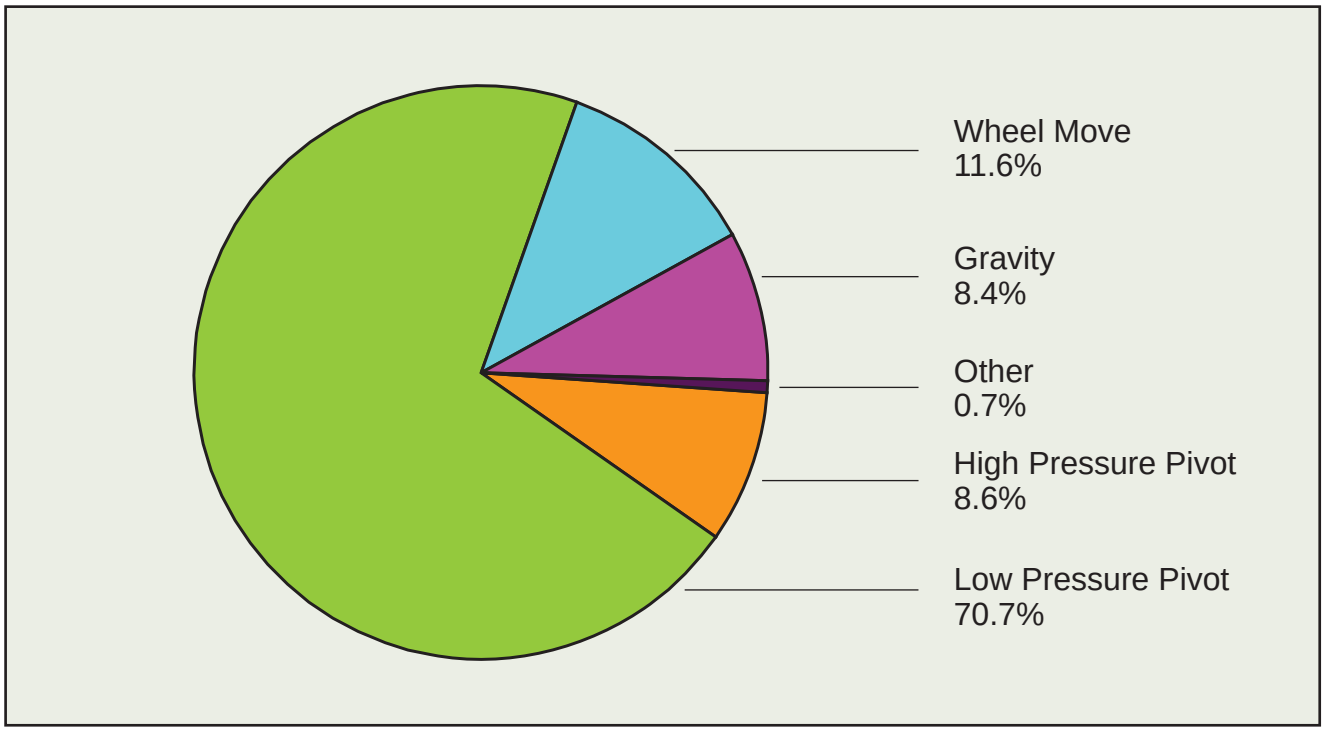
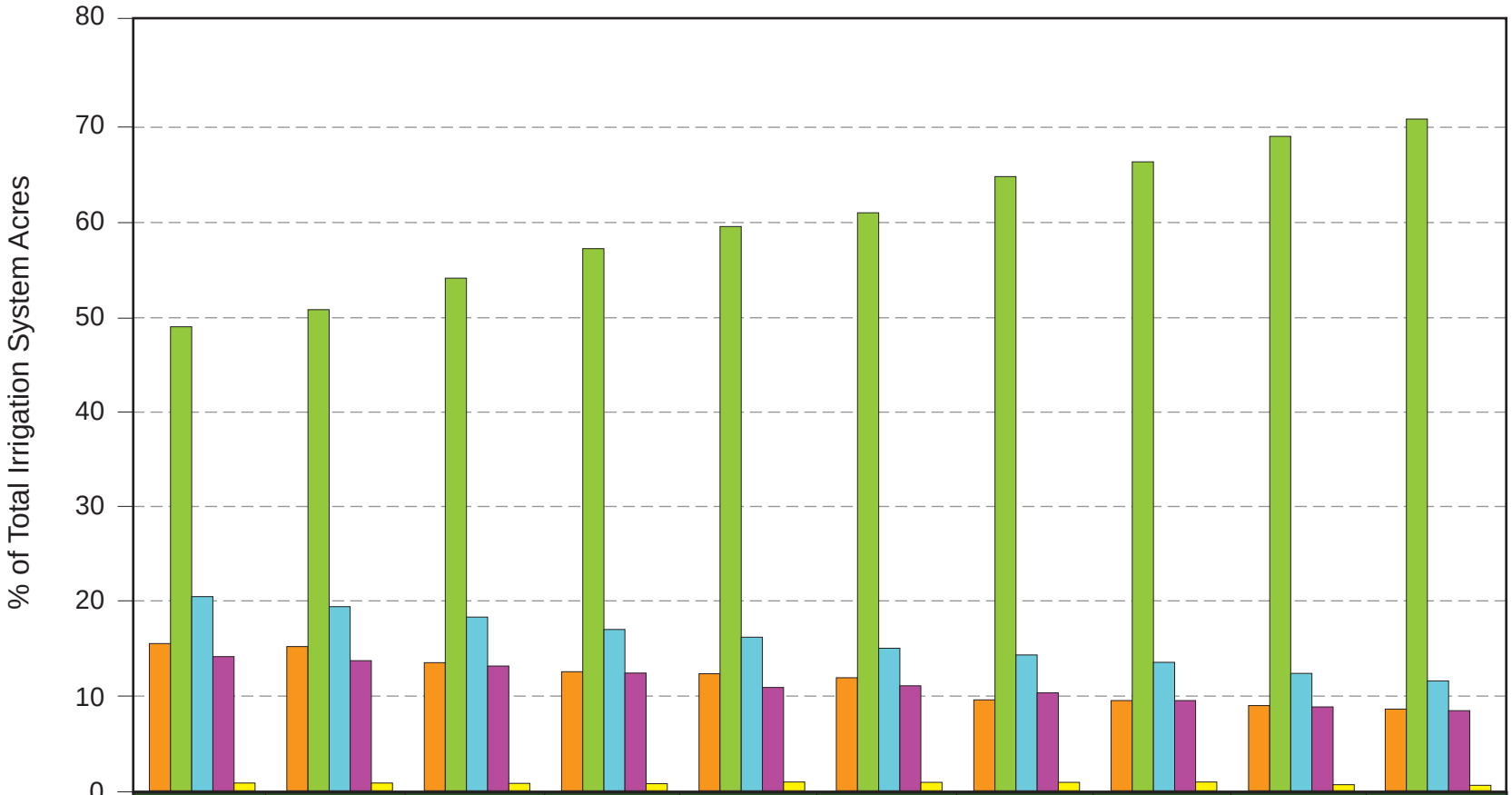


Figure 4. On-farm Irrigation Methods within the 13 Irrigation Districts in Southern Alberta in 2014

Table 3. On-farm Irrigation Method Summary within the 13 Irrigation Districts in Southern Alberta in 2014

IRRIGATION METHOD		AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	Individual Method Total	Total Acres Covered
HIGH PRESSURE PIVOT SPRINKLER	Pivot High Pressure		18,994	27,705	459	8,256	2,186		67	4,568	9,278	9,236	2,102	20,132	**102,984**	**116,436**
	Pivot High Pressure - Corner arm		1,389	2,820		4,435				67	1,491	793		639	**11,633**	
	Linear - High Pressure		138	217		818				100		84		462	**1,819**	
	percent of district -----	0.0%	8.8%	10.3%	12.8%	7.5%	11.9%	0.0%	7.5%	10.6%	2.9%	12.8%	6.2%	0.0%	**8.6%**	
LOW PRESSURE PIVOT SPRINKLER	Pivot Medium Pressure		873	4,098		1,784		253		360	3,327				**10,695**	**957,117**
	Pivot Medium Pressure - Corner Arm		448	248		301					547				**1,544**	
	Pivot Low Pressure	675	153,848	164,962	576	51,974	7,700		604	18,361	268,956	42,271	15,270	35,886	**761,083**	
	Pivot Low Pressure - Corner Arm		32,872	14,877		63,440				1,332	46,509	15,347	1,181	4,406	**179,964**	
	Linear - Low Pressure		93	1,615		272				125	1,159	220	80	268	**3,831**	
	percent of district -----	20.9%	80.9%	62.4%	16.1%	65.7%	42.1%	6.9%	67.3%	45.1%	85.7%	73.3%	48.5%	49.0%	**70.7%**	
WHEEL MOVE	Wheel Move -Two Laterals	1,763	5,899	17,090	1,694	20,360	4,961	417	226	13,085	30,225	8,314	1,506	9,538	**115,076**	**157,056**
	Wheel Move - Four Laterals		3,253	5,327		23,797	140			2,582	3,644	486	103	2,647	**41,979**	
	percent of district -----	54.5%	3.9%	7.5%	47.3%	24.6%	27.9%	11.4%	25.2%	35.0%	9.1%	11.2%	4.7%	14.7%	**11.6%**	
GRAVITY	Gravity - Developed		12,180	46,591		1,107	3,119			2,682	1,286	877	1,325	245	**69,412**	**114,122**
	Gravity - Undeveloped	208	2,318	11,489	748	884		2,993		1,037	6,107	1,080	12,372	5,475	**44,710**	
	percent of district -----	6.4%	6.2%	19.5%	20.9%	1.1%	17.0%	81.7%	0.0%	8.3%	2.0%	2.5%	40.2%	6.9%	**8.4%**	
OTHER	Volume Gun - Stationary										130	10		164	**304**	**8,941**
	Volume Gun - Traveller		63	285		144					39	22		565	**1,118**	
	Solid Set (underground sprinkler)	47		8	92	592				95	254			353	**1,441**	
	Hand Move (sprinkler above ground)	528	57	525	5	972	174			285	989	103	147	557	**4,342**	
	Micro - Spray - Sprinkler					41				42	39	15	15	96	**248**	
	Micro - Drip - Trickle						20			7	119			1,328	**1,474**	
	Other Application Use	11			5										**16**	
	percent of district -----	18.1%	0.1%	0.3%	2.8%	1.0%	1.1%	0.0%	0.0%	1.0%	0.4%	0.2%	0.5%	3.7%	**0.7%**	
	Total Acres Covered	**3,232**	**232,422**	**297,857**	**3,579**	**179,176**	**18,300**	**3,663**	**897**	**44,728**	**374,099**	**78,858**	**34,101**	**82,760**	**1,353,671**	**1,353,671**



		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
High Pressure Pivot	Acres	201,601	198,011	176,421	164,072	160,665	156,784	126,864	126,430	120,124	117,111
Low Pressure Pivot		635,880	660,168	705,260	747,187	773,538	802,173	856,707	879,651	922,716	956,422
Wheelmove		265,897	252,831	239,140	222,247	210,606	198,043	189,410	179,837	165,561	157,056
Gravity		183,811	178,411	171,487	162,063	141,885	145,879	136,709	126,217	118,307	114,122
Other		10,600	10,579	10,380	9,870	11,935	11,826	11,626	12,444	8,785	8,941

Figure 5. Irrigation Method Summary within the 13 Irrigation Districts in Southern Alberta (2005 - 2014)

Table 4. Assessment Roll Acres within the 13 Irrigation Districts

YEAR	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	TOTAL
76	3,081	139,665	219,405	4,430	109,629	9,069	3,720	2,069	28,350	262,231	66,423	33,358	52,190	933,620
77	3,081	147,795	224,967	4,430	111,735	9,480	3,720	1,319	31,626	274,301	68,178	33,617	68,549	982,798
78	3,104	153,120	227,202	4,431	111,947	10,737	3,717	1,776	31,570	284,151	68,815	33,651	71,603	1,005,824
79	3,104	150,160	227,254	4,477	111,924	10,797	3,710	1,776	31,524	287,329	69,828	33,546	74,525	1,009,954
1980	3,104	164,889	229,110	4,477	112,562	10,797	3,710	1,776	33,681	293,126	70,368	33,544	76,029	1,037,173
81	3,096	174,641	230,553	4,457	113,845	10,963	3,710	1,776	35,385	299,548	70,819	33,417	79,633	1,061,843
82	3,127	179,613	239,651	4,423	114,919	11,647	3,710	1,716	39,130	301,446	71,529	33,383	81,864	1,086,158
83	2,916	181,174	244,099	4,440	116,745	12,357	3,710	1,776	39,148	313,728	72,623	33,448	81,480	1,107,644
84	3,051	183,529	244,243	4,440	117,869	13,047	3,710	1,776	41,729	319,712	72,971	33,534	82,974	1,122,585
1985	3,399	185,034	246,658	4,460	118,883	14,218	3,710	1,319	44,990	328,063	73,063	33,854	84,245	1,141,896
86	3,444	189,202	247,804	4,460	126,307	14,579	3,690	1,210	44,950	331,493	73,314	34,336	83,924	1,158,713
87	3,444	190,263	249,372	4,479	128,867	14,885	3,690	1,210	44,407	334,285	73,654	34,450	85,405	1,168,411
88	3,435	192,424	252,432	4,709	131,565	15,030	3,690	1,210	44,196	339,091	73,602	34,615	86,198	1,182,197
89	3,500	194,977	256,353	4,729	133,620	15,569	3,700	1,210	44,144	342,451	74,898	34,818	87,242	1,197,211
1990	3,500	199,980	260,523	4,742	135,632	15,099	3,728	1,210	44,044	349,849	74,568	34,769	88,480	1,216,124
91	3,527	201,070	263,889	4,762	137,719	16,665	3,728	1,210	44,305	350,108	77,740	34,687	88,112	1,227,522
92	3,519	202,499	269,462	4,800	139,688	16,391	3,734	1,210	44,279	351,393	78,177	34,868	87,949	1,237,969
93	3,519	204,466	270,008	4,780	138,095	16,775	3,737	1,210	44,229	353,039	78,412	34,772	87,453	1,240,495
94	3,519	205,983	272,024	4,780	141,517	16,785	3,727	1,210	44,219	353,466	78,629	34,438	86,725	1,247,022
1995	3,519	207,652	273,848	4,780	143,608	17,908	3,727	1,210	43,678	356,618	78,676	34,428	86,942	1,256,594
96	3,519	209,560	276,405	4,760	147,241	18,169	3,727	1,210	44,315	358,399	79,069	34,506	87,258	1,268,138
97	3,519	209,686	279,966	4,760	150,843	18,300	3,713	1,210	44,810	360,659	79,788	34,353	86,284	1,277,891
98	3,519	210,690	280,573	4,769	153,365	18,300	3,722	1,210	45,533	360,780	80,455	34,352	86,771	1,284,039
99	3,609	211,152	281,107	4,769	154,886	18,300	3,722	1,210	45,751	367,161	81,984	34,352	88,131	1,296,134
2000	3,609	210,352	281,720	4,763	157,825	18,300	3,722	1,210	45,888	369,771	82,257	34,329	87,236	1,300,982
01	3,611	209,927	281,710	4,763	163,878	18,300	3,712	1,210	46,235	370,925	82,261	34,329	87,924	1,308,785
02	3,611	214,279	282,516	4,763	163,870	18,300	3,712	1,210	46,304	371,319	82,284	34,423	96,512	1,323,103
03	3,611	214,585	282,961	4,763	164,288	18,320	3,712	1,210	46,304	372,114	82,562	34,423	96,646	1,325,499
04	3,611	216,533	283,625	4,763	175,568	18,320	3,712	1,210	46,296	372,979	82,515	34,093	96,535	1,339,760
2005	3,608	219,733	283,706	4,763	175,628	18,320	3,561	1,210	46,296	372,619	82,533	34,081	96,415	1,342,473
06	3,608	221,677	284,074	4,763	175,636	18,320	3,561	1,101	46,306	372,618	82,527	34,025	96,100	1,344,316
07	3,699	231,713	284,419	5,205	175,913	18,300	3,654	1,101	46,306	372,996	82,804	34,044	96,091	1,356,245
08	3,699	233,869	285,086	5,126	176,069	18,300	3,700	1,101	46,293	373,162	82,600	34,069	96,079	1,359,153
09	3,699	233,438	294,612	4,706	176,201	18,300	3,700	1,101	46,303	373,092	82,569	34,325	96,045	1,368,091
2010	4,389	233,925	290,429	4,793	176,282	18,300	3,700	1,101	46,302	373,018	82,728	34,370	95,628	1,364,965
11	4,390	234,014	294,373	4,848	176,187	18,300	3,617	1,101	46,302	374,408	82,773	34,382	95,754	1,370,449
12	4,376	234,327	294,620	4,840	177,593	18,300	3,616	1,101	46,402	373,835	82,750	34,382	95,788	1,371,930
13	4,376	241,604	296,619	4,853	179,014	18,300	3,698	1,101	46,500	380,371	82,822	34,393	95,776	1,389,427
14	4,511	254,909	297,884	4,876	179,719	18,300	3,698	1,101	46,500	388,039	83,263	34,395	95,641	1,412,836

Notes: Assessment roll acres include "irrigation", "terminable" and "annual" acres. Only "irrigation" and "terminable" acres are considered in district expansion limits. In 2014, irrigation districts reported 6,804 annual acres.

Table 5. Acres Actually Irrigated within the 13 Irrigation Districts

YEAR	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	TOTAL
1960	440	71,392	189,761	1,542	71,006	5,000	2,789	200	15,200	179,477	29,448	16,536	12,000	**594,791**
61	1,800	80,603	189,421	1,542	73,637	6,000	2,760	200	18,300	157,300	30,747	23,095	23,000	**608,405**
62	2,177	83,259	190,866	4,187	73,317	7,000	2,760	200	18,500	155,500	36,029	28,465	30,000	**632,260**
63	2,315	87,267	192,324	4,511	63,000	7,250	2,789	200	18,500	170,000	33,902	27,012	25,000	**634,070**
64	2,523	86,034	193,381	4,511	70,575	7,500	2,789	200	18,000	170,000	39,015	19,376	24,000	**637,904**
1965	2,523	44,507	194,824	4,511	22,778	3,000	2,789	1,500	15,000	165,000	26,005	9,805	2,750	**494,992**
66	2,523	40,423	195,905	4,523	19,196	4,000	2,789	1,050	16,000	165,000	25,904	12,725	3,100	**493,138**
67	2,523	71,936	196,549	4,523	47,962	5,000	2,789	1,250	17,000	160,000	38,235	11,866	12,870	**572,503**
68	2,523	82,876	198,352	4,523	56,993	4,400	2,789	900	15,200	154,336	45,420	10,109	10,000	**588,421**
69	2,523	79,980	198,248	4,523	35,902	4,500	2,789	900	15,000	124,879	45,980	10,228	13,500	**538,952**
1970	2,523	77,580	199,729	4,523	49,783	5,000	2,789	1,000	15,000	134,982	50,094	15,019	15,000	**573,022**
71	2,424	81,018	166,219	4,343	60,207	5,500	2,789	1,100	15,000	149,444	52,185	14,417	16,000	**570,646**
72	2,400	82,928	175,915	4,305	58,817	5,750	2,000	675	15,000	147,884	52,470	11,061	17,000	**576,205**
73	2,400	98,185	183,279	4,305	80,995	5,600	3,720	800	15,000	176,120	58,826	22,233	19,000	**670,463**
74	2,424	108,021	188,657	4,305	90,085	6,000	3,737	700	18,000	190,017	60,981	11,710	22,000	**706,637**
1975	2,400	116,155	179,095	4,430	92,850	6,000	3,000	600	21,500	171,883	44,606	4,952	34,036	**681,507**
76	2,400	125,380	201,438	4,600	96,661	9,070	2,910	700	22,680	213,085	59,116	13,355	39,824	**791,219**
77	2,500	131,492	208,785	4,430	97,829	7,000	2,000	350	30,000	232,072	64,115	15,000	43,525	**839,098**
78	2,400	127,236	204,192	4,430	93,562	6,000	2,775	578	31,060	198,755	56,940	8,671	33,329	**769,928**
79	2,500	133,517	213,837	4,476	100,487	8,000	2,900	623	31,264	249,232	62,635	13,899	46,570	**869,940**
1980	2,500	134,493	212,524	4,476	95,979	8,000	2,900	600	19,137	251,914	63,202	12,607	43,986	**852,318**
81	2,500	140,300	216,200	4,476	90,552	8,650	2,783	0	19,462	259,564	66,206	15,064	28,389	**854,146**
82	1,200	152,144	216,620	3,000	104,533	8,500	3,154	650	25,169	268,916	67,305	10,054	41,996	**903,241**
83	1,200	168,461	231,125	3,000	108,141	9,000	3,154	650	28,055	288,969	68,474	12,734	46,638	**969,601**
84	1,200	173,334	238,000	3,000	102,301	10,200	3,154	600	34,728	300,071	69,847	12,313	46,638	**995,386**
1985	2,933	174,087	244,763	3,664	114,635	13,000	3,184	700	36,286	305,560	70,133	12,620	49,666	**1,031,231**
86	2,933	174,903	246,916	3,600	113,663	13,000	3,184	700	36,008	307,875	69,928	13,146	48,000	**1,033,856**
87	2,200	178,482	245,514	4,076	119,562	12,400	3,321	700	36,008	305,964	69,413	12,526	46,984	**1,037,150**
88	2,500	173,400	241,494	3,900	124,555	13,436	3,100	500	36,496	316,223	69,581	14,536	52,950	**1,052,671**
89	1,962	181,106	249,623	3,900	127,330	13,555	2,000	0	35,766	323,400	70,278	11,693	52,153	**1,072,766**
1990	2,446	183,147	253,261	4,500	127,439	14,000	2,500	0	36,911	338,274	73,329	11,523	49,000	**1,096,330**
91	2,473	182,932	246,083	4,200	130,989	15,000	2,880	650	32,847	319,745	73,169	11,548	48,300	**1,070,816**
92	2,519	182,543	256,342	4,200	131,305	15,240	2,880	0	36,788	324,477	74,229	15,499	43,889	**1,089,911**
93	0	184,463	259,778	0	67,565	0	0	0	0	262,718	66,158	0	40,007	**880,689**
94	1,940	187,247	259,942	4,200	133,803	11,425	3,277	734	36,291	330,949	73,949	14,255	47,335	**1,105,347**
1995	765	192,328	263,576	1,000	100,589	3,250	3,300	643	16,473	289,173	72,108	5,035	39,130	**987,370**
96	2,145	196,055	271,075	4,277	143,147	14,341	3,355	734	39,662	339,098	74,766	14,135	68,710	**1,171,500**
97	2,476	197,904	274,880	4,600	145,061	13,479	3,600	794	39,484	342,234	76,083	19,205	62,448	**1,182,248**
98	1,930	198,197	274,942	4,600	122,379	11,189	3,228	1,055	32,259	342,758	76,872	17,276	67,643	**1,154,328**
99	1,870	198,060	277,723	4,735	145,782	14,723	3,510	1,210	38,966	355,988	79,166	17,407	51,032	**1,190,172**
2000	2,361	199,873	278,956	4,763	154,300	15,427	3,510	0	42,062	352,372	79,206	19,741	64,414	**1,216,985**
01	3,155	201,859	279,354	4,763	160,657	17,520	3,510	0	39,326	339,666	76,653	21,708	71,158	**1,219,329**
02	2,422	202,807	281,070	4,763	162,624	14,717	3,510	1,149	37,221	342,053	76,245	20,364	75,635	**1,224,580**
03	2,386	202,974	280,624	4,763	162,779	15,579	3,510	1,194	42,210	351,257	76,884	22,660	67,540	**1,234,360**
04	2,386	203,007	283,625	4,763	175,406	14,489	3,510	800	38,461	353,085	76,277	21,735	54,666	**1,232,210**
2005	2,361	206,452	282,267	4,763	175,206	13,044	3,510	800	36,611	346,596	77,522	20,780	56,186	**1,226,097**
06	2,361	208,378	280,753	4,763	175,184	13,232	3,510	0	41,156	335,269	76,765	22,771	43,136	**1,207,278**
07	2,361	201,286	284,419	4,763	174,673	14,676	3,509	600	42,573	345,935	77,068	22,021	40,716	**1,214,600**
08	2,361	206,284	280,691	4,763	175,886	13,420	3,509	0	38,617	352,564	77,132	21,735	48,126	**1,225,088**
09	2,361	211,578	285,191	4,706	174,487	14,866	3,500	800	40,174	352,104	77,571	23,383	64,196	**1,254,916**
2010	150	182,483	235,371	0	174,518	5,688	500	374	17,481	340,078	72,989	17,333	48,700	**1,095,665**
11	2,961	202,478	294,569	4,714	175,683	12,774	500	770	37,163	346,079	75,048	21,003	42,270	**1,216,012**
12	2,797	208,217	294,748	4,625	177,593	14,175	535	878	39,560	338,439	76,775	22,655	52,483	**1,233,480**
13	3,285	217,417	295,923	1,736	178,697	14,386	608	770	39,839	338,588	76,002	22,708	49,791	**1,239,750**
14	1,611	224,952	297,015	1,736	179,296	14,305	1,801	897	37,511	362,254	75,838	21,044	60,587	**1,278,847**

Note: Data from 1920 to 1959 available upon request.

Table 6. Irrigation Districts Annual Water Rates ($ per assessed acre per year)

YEAR	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID
86	$6.00	$10.00	$7.25	$7.50	$12.50	$6.00	$5.20	$6.00	$6.50	$13.00	$11.00	$3.25	$7.47
87	$6.00	$10.00	$7.50	$7.50	$12.50	$6.00	$5.20	$6.00	$6.50	$13.00	$11.00	$3.25	$7.47
88	$7.00	$10.00	$7.50	$8.00	$12.50	$6.00	$5.20	$6.00	$6.50	$13.00	$12.00	$3.25	$7.70
89	$7.00	$10.00	$8.00	$8.00	$13.50	$6.00	$6.20	$6.00	$6.50	$13.25	$12.00	$3.50	$8.00
1990	$8.00	$10.00	$8.50	$8.00	$13.50	$6.00	$6.20	$6.00	$6.50	$14.00	$12.00	$3.75	$11.00
91	$8.00	$10.00	$8.50	$7.00	$13.50	$6.00	$6.20	$6.00	$6.50	$14.00	$12.00	$4.00	$13.00
92	$8.00	$11.00	$8.50	$7.00	$14.00	$6.00	$6.20	$6.00	$6.50	$14.00	$12.00	$4.25	$13.50
93	$8.00	$11.00	$8.50	$7.00	$14.00	$6.00	$6.20	$6.00	$6.50	$14.25	$12.00	$4.50	$13.50
94	$8.00	$12.00	$8.50	$7.00	$14.00	$6.50	$6.20	$6.00	$7.00	$15.25	$12.00	$4.50	$14.75
1995	$8.00	$13.00	$8.50	$8.00	$14.00	$7.00	$8.00	$8.50	$7.00	$16.15	$12.00	$4.50	$14.75
96	$8.00	$13.00	$8.50	$8.00	$14.00	$7.00	$8.00	$8.50	$7.50	$16.15	$12.00	$6.50	$15.25
97	$8.00	$13.00	$7.50	$8.00	$14.00	$7.00	$8.00	$8.50	$7.50	$16.15	$12.00	$6.75	$15.25
98	$8.00	$13.50	$7.50	$8.00	$14.00	$7.50	$8.00	$8.50	$8.50	$16.65	$12.00	$7.00	$16.25
99	$8.00	$14.50	$7.50	$8.00	$14.00	$7.50	$8.00	$8.50	$8.50	$17.00	$12.00	$7.25	$16.25
2000	$8.00	$14.50	$7.50	$8.00	$14.00	$7.50	$8.00	$8.50	$8.50	$17.50	$12.00	$7.50	$16.25
01	$8.00	$14.50	$7.50	$8.00	$14.00	$7.50	$8.00	$8.50	$8.50	$17.90	$11.00	$7.50	$16.25
02	$8.00	$14.50	$7.50	$8.00	$14.00	$7.50	$8.00	$6.00	$8.50	$16.90	$11.00	$7.75	$16.25
03	$9.00	$15.00	$0.00	$10.00	$14.00	$8.00	$8.00	$13.58	$8.50	$17.90	$11.00	$8.25	$16.25
04	$9.00	$14.50	$0.00	$11.00	$14.00	$8.00	$8.00	$13.58	$9.50	$17.90	$11.00	$8.25	$16.25
2005	$9.00	$14.50	$0.00	$11.00	$14.00	$8.50	$10.00	$13.58	$9.50	$17.90	$11.00	$8.25	$16.25
06	$9.00	$14.50	$0.00	$11.00	$14.00	$8.50	$10.00	$15.00	$9.50	$18.50	$11.00	$8.25	$16.25
07	$9.00	$14.50	$0.00	$11.00	$14.00	$9.00	$10.00	$18.00	$9.50	$18.75	$8.00	$8.25	$16.25
08	$10.00	$14.50	$0.00	$11.50	$14.00	$9.00	$12.00	$21.00	$9.50	$18.75	$8.00	$8.50	$16.25
09	$10.00	$15.00	$0.00	$11.50	$14.00	$9.00	$12.00	$22.50	$9.50	$19.00	$8.00	$8.50	$16.25
2010	$10.00	$15.00	$0.00	$11.50	$14.00	$9.50	$12.00	$21.50	$9.50	$20.00	$8.00	$8.50	$16.25
11	$10.00	$15.00	$0.00	$11.50	$14.00	$9.50	$12.00	$20.50	$9.50	$20.00	$8.00	$8.50	$16.25
12	$11.00	$16.00*	$0.00*	$11.50*	$14.00*	$11.00*	$12.00	$20.50	$10.00*	$20.00*	$8.00*	$9.00	$16.25*
13	$11.00	$16.00*	$0.00*	$11.50*	$14.00*	$11.00*	$12.00	$20.50	$10.00*	$20.00*	$8.00*	$11.00	$18.00*
14	$12.00	$16.00*	$0.00*	$12.00*	$16.00*	$11.00*	$12.00	$23.00	$10.00*	$20.00*	$8.00*	$11.00	$18.00*

Note: * Some districts levy additional surcharges. The 2014 rates were:

AID – $3.00 per acre for pipeline delivery in Township 2
– $5.00 per acre for pipeline delivery in Township 3

BRID – $0.70 per acre inch for volumes used on flood parcels over the annual water allocation (sprinkler parcels may not use more than the allocation)

EID – $6.00 per acre if served from H Cowoki, 03 East Branch, Springhill, or Rolling Hills Reservoir pressure systems

LID – $3.00 per acre for pipeline delivery

LNID – $0.30 per psi for pressure pipeline
– $5.00 per acre inch for volumes over the annual allocation

MID – $4.00 per acre for pipeline delivery; $1.00 per 10 psi

RID – charges vary for pipeline and pressure delivery
– $100 per acre inch for volumes over the annual allocation

SMRID – $100 per acre inch for volumes over the annual allocation

TID – $50 per acre inch for volumes over the annual allocation

WID – $0.31 per psi; $0.50 per acre for automated screen cleaning

Some districts have centralized pump stations delivering pressurized water to individual farm turnouts. In these cases, the irrigators served by that pump station are charged for the energy used and often an additional maintenance charge.

Table 7. Gross Annual Diversions To Alberta Irrigation Districts

	OLDMAN RIVER BASIN										BOW RIVER BASIN			
DISTRICT	**AID**	**LID**	**LNID**	**MID**	**MVID**	**RCID**	**RID**	**SMRID**	**TID**	**UID**	**BRID**	**EID**	**WID**	**TOTALS**
WATER SOURCE	diversion from Belly River	diversion from Belly River	diversion from Oldman River	diversion from Belly, Waterton, St. Mary Rivers	diversion from Belly River	diversion from Gros Ventre Ck.	diversion from SMRID main canal	diversion from Belly, Waterton, St. Mary Rivers	diversion from SMRID main canal	diversion from Belly, Waterton Rivers	diversion from Bow River	diversion from Bow River	diversion from Bow River	
EXPANSION LIMITS (acres)	7,500	6,000	227,000	18,300	4,240	1,210	46,500	412,000	92,200	34,400	260,000	311,000	95,000	1,515,350
WATER LICENCE ALLOCATION (acre-feet)	9,000	12,000	334,450	34,000	8,000	3,000	81,000	722,000	158,000	66,210	450,000	761,000	158,400	2,797,060
YEAR	VOLUME OF WATER DIVERTED (acre-feet)													
81			132,955	8,869		264	22,162	379,075	108,427	12,242	359,000	577,969	108,630	1,709,593
82			142,683	13,068		3,551	27,697	332,337	91,998	19,133	303,000	481,258	129,712	1,544,437
83			150,790	14,363		1,354	14,955	361,537	97,674	24,078	347,000	580,299	146,737	1,738,787
84			177,543	18,857		67	17,544	492,674	101,643	25,093	361,000	657,640	162,140	2,014,201
1985	5,020	8,500	184,029	18,533	4,250	3,827	27,302	425,500	95,751	24,193	358,722	655,188	158,897	1,969,712
86	4,074	6,858	182,159	14,114	3,212	1,832	22,045	406,536	101,597	20,106	311,000	680,592	131,333	1,885,458
87	4,392	5,644	181,934	14,649	3,180	1,321	40,559	426,434	98,621	19,958	309,000	639,928	129,712	1,875,332
88	6,910	9,398	222,936	22,918	6,066	256	60,531	563,621	121,668	30,462	423,000	730,274	171,868	2,369,908
89	4,613	3,517	198,789	12,338	2,750	122	30,728	504,255	78,396	18,372	333,000	605,148	122,416	1,914,444
1990	3,754	5,328	191,899	13,555	3,290	298	32,000	467,244	98,572	16,133	380,907	689,178	128,091	2,030,249
91	3,556	4,468	184,737	12,712	2,662	1,775	30,702	391,634	94,956	17,003	334,792	629,872	147,547	1,856,416
92	2,170	11,216	136,925	15,695	4,118	0	36,210	441,745	101,122	18,628	336,878	625,650	135,387	1,865,744
93	2,126	1,824	61,753	4,848	988	3,300	13,574	218,375	59,278	8,107	210,340	423,551	114,309	1,122,373
94	4,110	4,319	179,663	13,895	3,325	758	28,328	415,162	103,028	16,827	364,126	559,476	132,104	1,825,121
1995	1,802	1,548	110,114	4,248	861	208	19,953	390,285	79,818	7,710	302,305	602,098	116,254	1,637,204
96	4,035	4,892	206,206	12,506	2,660	1,085	45,527	498,483	127,436	19,832	328,182	615,478	117,065	1,983,387
97	6,051	5,193	188,378	12,564	1,529	1,760	38,043	455,300	115,582	20,364	343,380	593,782	116,740	1,898,666
98	4,874	5,331	157,758	9,671	2,323	1,726	33,834	405,000	116,300	14,895	303,565	638,500	142,367	1,836,144
99	3,485	11,415	196,906	25,178	2,499	1,700	42,960	411,532	105,208	20,900	298,524	426,788	88,410	1,635,505
2000	6,000	11,240	263,413	35,375	6,700	0	58,202	451,700	140,046	37,200	417,897	675,238	156,400	2,259,411
01*	3,952	7,593	308,236	21,173	6,814	0	40,207	325,700	94,770	27,526	413,780	685,000	160,000	2,094,751
02	2,938	9,835	112,143	10,788	3,033	N/A	23,552	466,700	53,324	21,283	333,541	430,000	149,577	1,616,714
03	4,598	7,964	201,812	20,711	5,889	N/A	49,723	330,600	86,500	32,500	279,798	459,700	128,700	1,608,495
04	3,440	5,425	166,276	12,391	2,660	N/A	28,224	367,500	64,399	21,600	230,817	417,370	114,000	1,434,102
2005	4,000	6,243	134,088	8,859	2,067	1,190	27,046	316,200	72,487	13,717	182,819	318,000	120,400	1,207,116
06	3,681	5,341	165,752	14,114	3,987	0	37,049	334,100	82,448	20,390	210,741	335,210	72,000	1,284,813
07	3,235	6,330	235,330	18,238	3,600	N/A	47,322	394,700	100,907	31,801	256,518	417,830	68,000	1,583,811
08	3,584	6,389	178,750	12,659	2,609	200	34,348	381,200	85,829	21,054	238,000	409,400	85,000	1,459,022
09	2,651	5,378	179,945	14,885	2,138	200	45,705	370,100	97,532	17,506	295,557	435,650	120,829	1,588,076
2010	1,938	2,383	71,950	5,351	1,013	116	21,900	201,700	53,135	7,264	156,116	210,500	65,850	799,219
11	2,902	8,028	132,388	15,233	2,393	530	32,534	286,000	84,909	19,073	151,700	310,100	85,985	1,131,775
12	2,761	3,973	176,683	20,720	2,558	0***	35,200	340,800	88,309	19,039	260,000	343,200	103,862	1,397,105
13	3,446	4,101	139,035	17,210	2,297	2,319	39,723	314,600	77,371	18,598	240,000	383,400	99,473	1,341,573
14	3,113	5,928	120,097	13,552	1,801	700	31,448	297,600	71,847	16,565	222,191	371,000	113,666	1,269,535
Percent of Licence (2014)	34.6%	49.4%	35.9%	39.9%	22.5%	23.3%	38.8%	41.2%	45.5%	25.0%	49.4%	48.8%	71.8%	45.4%
**Average Volume	3,774	6,187	165,576	14,352	3,109	1,038	32,792	378,822	91,906	19,925	298,697	518,720	123,371	1,658,270

Notes: – Data obtained from Alberta Environment and Parks for AID, LID, MVID, RCID, and UID, and from Irrigation Districts for BRID, EID, LNID, MID, RID, SMRID, TID, and WID.
– RCID has a second supply from Ross Creek, but data has not been consistently recorded at that location.
– Diversion data represent the gross diversion into and through the works of the districts and include volumes used directly for irrigation purposes, reservoir filling and the water supplied or licensed to municipal, domestic, other agricultural, industrial and environmental uses.
– *Water rationing in effect for MID, RID, SMRID, TID, UID, AID, LID, MVID and BTAP in 2001.
– ** Average Volume 1976 - 2014
– ***RCID had zero diversion in 2012 since the diversion structure was under construction; 562 ac-ft was delivered for irrigation from Cavan Lake.

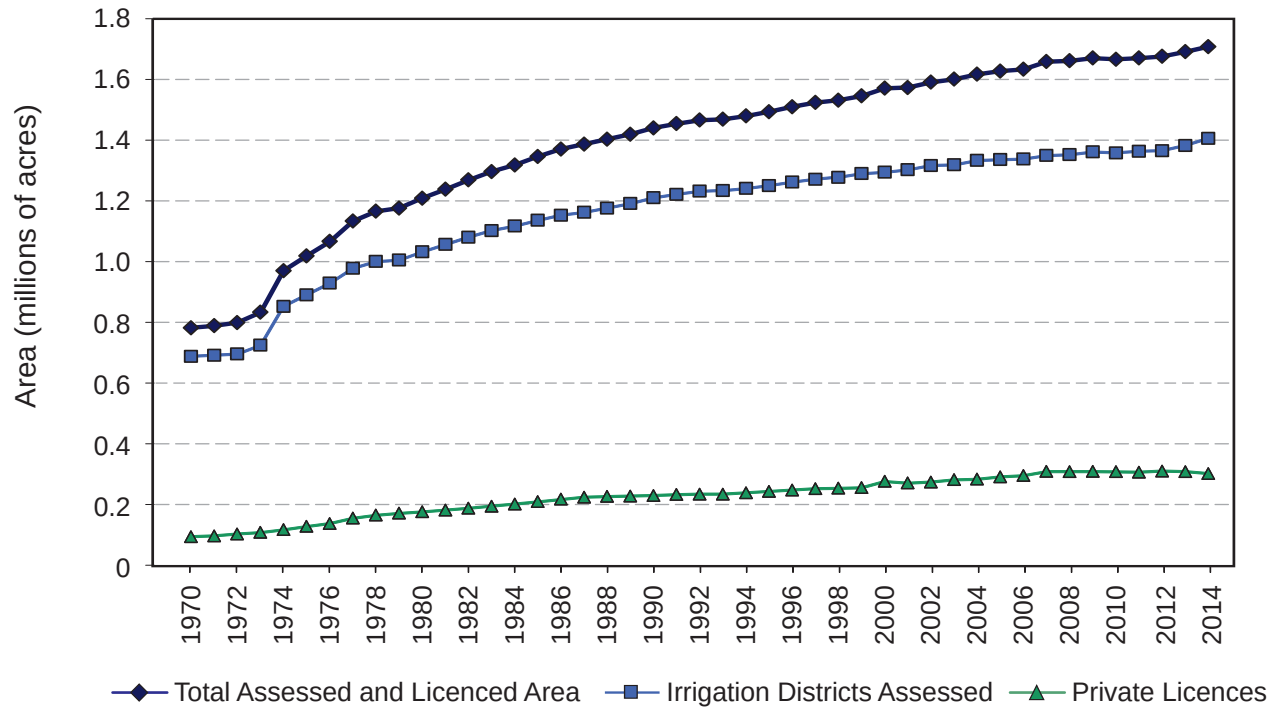


Figure 6. Growth in Irrigation in Alberta (1970 - 2014)

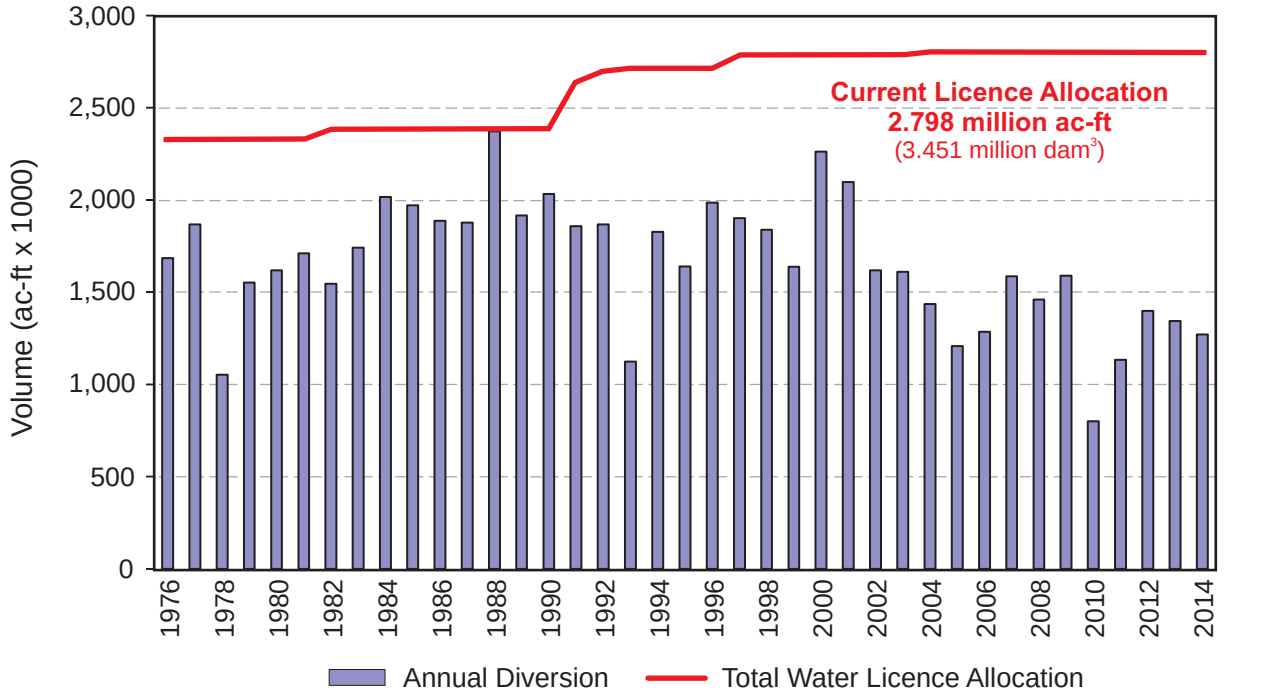


Figure 7. Irrigation Districts Gross Annual Diversions (1976 - 2014)

Note: Diversion data represent the gross diversion into and through the works of the irrigation districts and include volumes used directly for irrigation purposes, reservoir filling and the water supplied or licensed to municipal, domestic, other agricultural, industrial, environmental uses and water delivered to private licence holders through a conveyance agreement with the private licence holder.

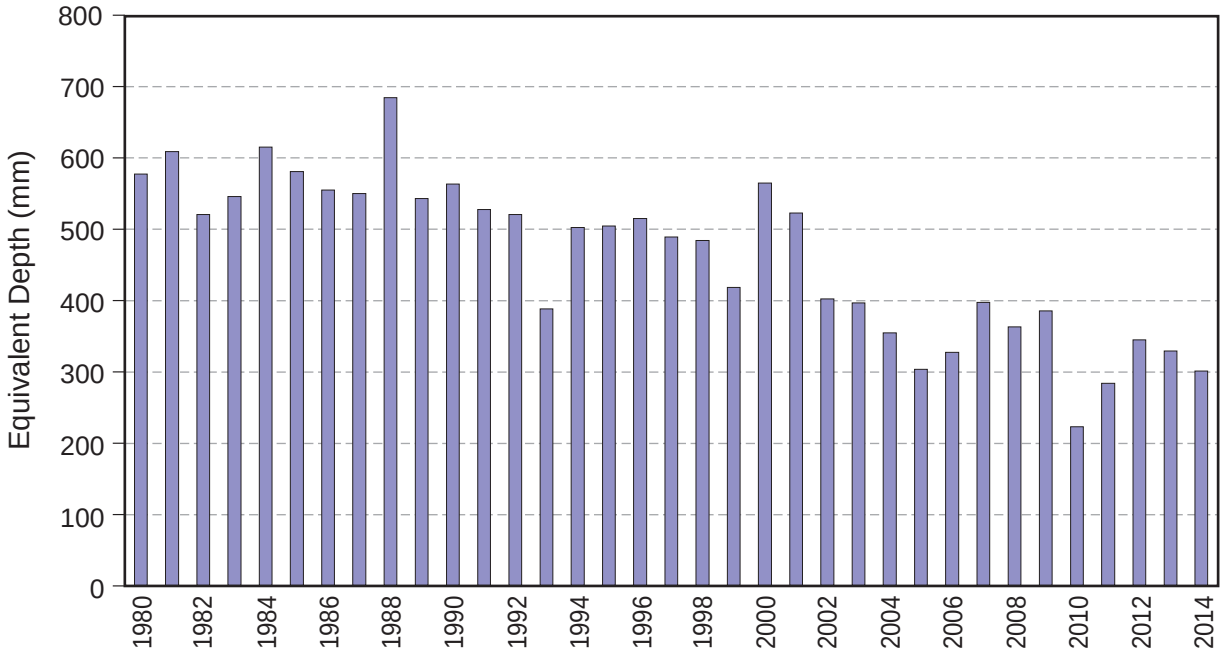


Figure 8. Irrigation Districts Gross Diversion Equivalent Depth (1980 - 2014)

Note: Irrigation district equivalent depth is the annual gross diversion of water (into the works of all 13 irrigation districts), divided by the area actually irrigated. However, this "depth" also includes water which may have accounted as net gains in reservoir storage, water diverted for other uses such as domestic, municipal, other agricultural, industrial, recreational and habitat enhancement purposes.

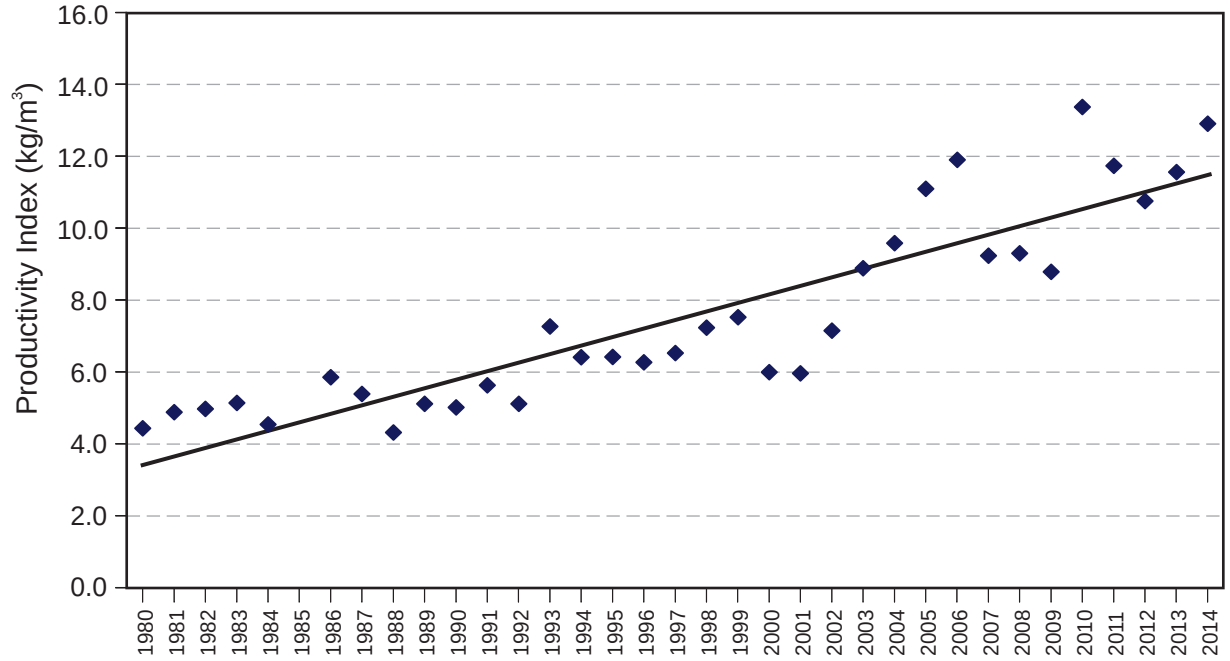
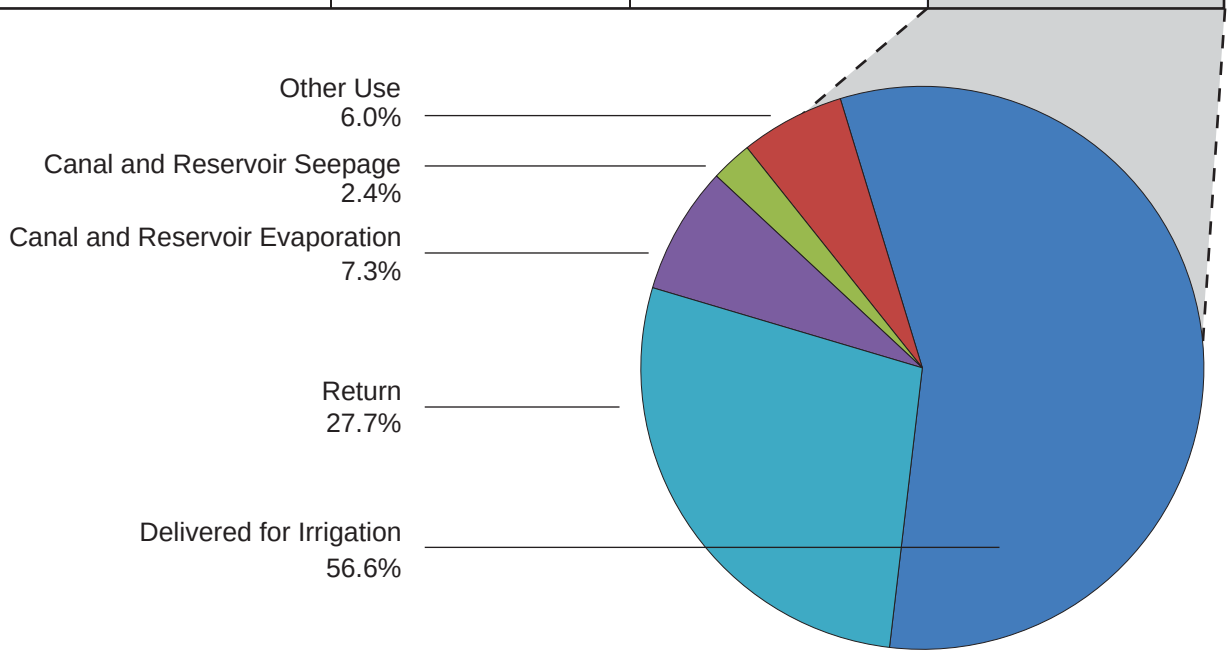


Figure 9. Irrigation Districts Water Use Productivity (1980 - 2014)

Note: Commodity yield per unit area divided by the volume of irrigation water diverted per unit area provides a measure of productive output per unit of irrigation water used. The historical yields of sugar beets (as reported by the Alberta Sugar Beet Growers), the historical yields of potatoes (as estimated by the Potato Growers of Alberta) and the historical yields of soft white spring wheat (as provided by Alberta Agriculture and Forestry) are tallied and then divided by the respective reported annual gross water diversions to the 13 irrigation districts to derive a "Productivity Index".

Table 8. Irrigation Districts Water Balance

Water Balance Category	OLDMAN RIVER BASIN	BOW RIVER BASIN	IRRIGATION DISTRICTS
Gross Diversion	562,900	706,900	1,269,800
Net District Storage Change	8,400	18,000	26,400
TOTAL DISTRICT USE	**571,300**	**724,900**	**1,296,200**
Delivered for Irrigation	336,200	397,100	733,300
Other Use	21,200	56,500	77,700
Canal & Reservoir Seepage	13,600	17,000	30,600
Canal & Reservoir Evaporation	40,800	54,300	95,100
Return	159,500	200,000	359,500
TOTAL DISTRICT OPERATIONS	**571,300**	**724,900**	**1,296,200**



Note: 1. Irrigation district reported values were used
2. Where district reporting was incomplete, Alberta Agriculture and Forestry calculated an estimate
3. All volumes are in acre-feet

Glossary

Gross Diversion - Volume of water diverted from a lake or the river system by irrigation districts

Net District Storage Change - Net volume of water removed from internal irrigation district reservoirs for use (a negative value indicates an increase in net reservoir storage volume over the irrigation season)

Total District Use - Total volume of water from diversion and storage used

Delivered for Irrigation - Net volume of water supplied for irrigation purposes

Other Use - Volume of water supplied for other uses including municipal and industrial

Canal & Reservoir Seepage - Water lost from reservoirs and through delivery system from seepage

Canal & Reservoir Evaporation - Water lost from evaporation from the surface of irrigation district canals and reservoirs

Return - Volume of water returned to the river system

Total District Operations - Total volume of water used for irrigation districts operations comprised of water delivered for irrigation, other use, seepage and evaporation, and water returned

Table 9. Conveyance Infrastructure by Type of Works within the 13 Irrigation Districts in 2014

	REHABILITATED										UN-REHABILITATED		
Irrigation District	Membrane-Lined Canals		Pipelines - Closed		Pipelines - Open		Concrete - Lined Canals		Earth Canals		Un-Rehabilitated Canals		Total Conveyance Works (km)
	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	
AID	4.5	11.9%	22.7	60.0%	0.2	0.6%	0.0	0.0%	1.0	2.6%	9.4	24.9%	**38**
BRID	139.8	14.0%	506.5	50.8%	8.6	0.9%	15.4	1.5%	188.4	18.9%	139.1	13.9%	**998**
EID	308.6	16.1%	1103.6	57.7%	37.6	2.0%	0.0	0.0%	205.2	10.7%	256.7	13.4%	**1,912**
LID	2.0	3.6%	29.5	53.9%	0.3	0.5%	0.0	0.0%	11.8	21.5%	11.2	20.5%	**55**
LNID	56.4	7.5%	463.4	61.6%	11.2	1.5%	38.3	5.1%	65.7	8.7%	116.9	15.5%	**752**
MID	1.2	1.2%	59.2	58.7%	1.5	1.5%	0.3	0.3%	33.7	33.5%	4.9	4.8%	**101**
MVID	0.0	0.0%	15.1	38.2%	1.8	4.6%	0.0	0.0%	17.0	42.8%	5.7	14.5%	**40**
RCID	0.0	0.0%	12.2	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	**12**
RID	0.0	0.0%	133.2	56.0%	6.2	2.6%	0.0	0.0%	78.9	33.2%	19.5	8.2%	**238**
SMRID	68.3	3.8%	928.1	51.4%	19.2	1.1%	63.0	3.5%	200.3	11.1%	526.6	29.2%	**1,805**
TID	56.6	16.4%	184.0	53.3%	15.0	4.4%	6.4	1.9%	63.2	18.3%	19.7	5.7%	**343**
UID	13.9	6.0%	87.6	37.7%	25.4	10.9%	0.2	0.1%	44.1	19.0%	61.1	26.3%	**232**
WID	59.2	5.6%	203.9	19.4%	37.0	3.5%	5.3	0.5%	163.9	15.6%	581.5	55.4%	**1,051**
Total	**710**	**9.4%**	**3,749**	**49.5%**	**164**	**2.2%**	**129**	**1.7%**	**1,073**	**14.2%**	**1,752**	**23.1%**	**7,578**
												Headworks Owned by Alberta Environment and Parks	**339**
												Total Length of Conveyance System in Southern Alberta (km)	**7,917**

NOTE: Rehabilitated infrastructure includes new works and those works re-constructed through:
– the Irrigation Rehabilitation Program (IRP) 1969 - 2014
– Alberta Environment and Parks headworks improvement program
Totals only include irrigation conveyance works, ie. does not include domestic water supply

Table 10. Irrigation District Infrastructure by Length and Replacement Cost in 2014

IRRIGATION DISTRICTS	CONVEYANCE WORKS		MAJOR STRUCTURES		DRAINAGE WORKS		TOTAL of ALL WORKS	
	length (km)	replacement cost ($'000)	number of units	replacement cost ($'000)	length (km)	replacement cost ($'000)	length (km) / structures	replacement cost ($'000)
AID	38	$10,912	0	$0	19	$521	**57 / 0**	**$11,433**
BRID	999	$372,968	22	$97,753	720	$15,294	**1,725 / 22**	**$486,015**
EID	1,912	$712,428	61	$349,421	1,921	$32,761	**3,836 / 61**	**$1,094,610**
LID	55	$12,776	0	$0	5	$116	**60 / 0**	**$12,892**
LNID	752	$263,626	2	$2,880	256	$7,250	**1,000 / 2**	**$273,756**
MID	101	$26,871	0	$0	162	$4,993	**263 / 0**	**$31,864**
MVID	40	$14,229	0	$0	1	$44	**41 / 0**	**$14,273**
RCID	12	$2,165	1	$135	22	$850	**34 / 1**	**$3,150**
RID	238	$61,898	0	$0	207	$8,427	**446 / 0**	**$70,324**
SMRID	1,805	$669,224	48	$335,617	411	$11,189	**2,218 / 48**	**$1,016,030**
TID	345	$133,313	12	$14,168	73	$4,598	**422 / 12**	**$152,080**
UID	232	$75,436	11	$16,206	57	$1,268	**290 / 11**	**$92,910**
WID	1,051	$351,050	13	$18,180	884	$21,561	**1,927 / 13**	**$390,791**
DISTRICT TOTALS	**7,578**	**$2,706,896**	**170**	**$834,361**	**4,738**	**$108,872**	**12,319 / 170**	**$3,650,129**

NOTE: Drainage works include both open channels and pipelines.
Total of All Works length values include the summation of conveyance and drainage works.

Table 11. Summary of Irrigation District Water Licence Allocations

Irrigation District	Other Purposes* (ac-ft)	Total Licensed Volume (ac-ft)
AID	700	9,000
BRID	2,380	450,000
EID	5,000	761,000
LID	1,000	12,000
LNID	39,068	334,450
MID	740	34,000
MVID	340	8,000
RCID	n/a	3,000
RID	4,500	81,000
SMRID	12,000	722,000
TID	8,000	158,000
UID	1,000	66,210
WID	3,500	158,400
Total	**78,228**	**2,797,060**

Note: Other purpose uses of water volumes licensed to irrigation districts include non-irrigation uses such as municipal, rural water supply, agricultural, commercial, industrial, rural residential, management of fish/wildlife, habitat enhancement and recreation.

* Water volumes allocated to other purposes are included in the total licensed volumes.

Table 12. Summary of Condition Assessments (All Works by Replacement Cost)

Works Category	Good ($'000)	Fair ($'000)	Poor ($'000)	TOTAL ($'000)
Conveyance	$1,837,411	$762,413	$107,071	$2,706,895
Drainage	$25,460	$65,410	$20,001	$108,871
Major Structures	$535,333	$291,816	$7,212	$834,361
TOTAL	**$2,398,204**	**$1,117,639**	**$134,284**	**$3,650,127**
Proportion	65.7%	30.6%	3.7%	100%

Note: Condition assessments ratings are determined based on criteria in the Irrigation Works Condition Evaluation Guidelines. Construction and material costs are updated approximately every five years. The last valuation was completed in 2012.

Table 13. Irrigation District Reservoirs

Location	Reservoir	Approximate Date of Impoundment	Live Storage (dam^3)	Live Storage (acre-feet)
Bow River Irrigation District	Badger	1985	57,120	46,300
	'D' Reservoir	2005	350	280
	'H' Reservoir	1953	2,790	2,260
	Lost Lake	1973/1987*	5,060	4,100
	'PFRID' Reservoir	2005	570	480
	Scope	1953	12,930	10,480
	Total storage		**78,820**	**63,900**
Eastern Irrigation District	Bantry # 1	1968	1,090	880
	Bantry # 2	1967	4,150	3,360
	Cowoki Lake	1937	8,370	6,780
	Crawling Valley	1984	94,300	76,450
	'J' Reservoir	1949/1966*	1,460	1,180
	Kitsim	1980	19,470	15,790
	Lake Newell	1914	315,300	255,610
	One Tree	1935	5,660	4,590
	Rock Lake	1956	3,990	3,240
	Rolling Hills	1940/2003*	40,640	32,950
	Snake Lake	1997	18,620	15,100
	Tilley "B"	1972	21,070	17,080
	Total storage		**534,120**	**433,010**
Lethbridge Northern Irrigation District	Park Lake	1928	1,440	1,170
	Picture Butte	1936	1,490	1,210
	Vandenburg	1992	120	90
	Total storage		**3,050**	**2,470**
Raymond Irrigation District	Corner Lake	1925	500	400
	Craddock	1925	620	500
	Factory Lake	1925	370	300
	Total storage		**1,490**	**1,200**
St. Mary River Irrigation District	Bullshead	1954	130	100
	Chin	1954	207,370	168,120
	Cross Coulee	1954	2,090	1,700
	Forty Mile	1987	100,430	81,420
	Murray	1954	30,630	24,830
	North East	1954	2,820	2,290
	Raymond	1954	1,810	1,470
	Sauder	1953/1982*	45,240	36,680
	Seven Persons	1953	900	730
	Sherburne	1952	12,190	9,880
	Stafford	1954/1982*	21,790	17,670
	Yellow Lake	1952	18,130	14,700
	Total storage		**443,530**	**359,590**
Taber Irrigation District	Fincastle	1952	3,770	3,060
	Horsefly	1950	6,370	5,170
	Taber Lake	1955	6,410	5,190
	Total storage		16,550	13,420
United Irrigation District	Cochrane Lake	1923	3,130	2,540
Western Irrigation District	Chestermere	1944	5,090	4,130
	Langdon	1979/2014*	15,750	12,770
	Total storage		**20,840**	**16,900**
Grand Total			**1,101,530**	**893,010**

Note: all reservoirs are off-stream storage sites

* denotes year of reservoir enlargement

Table 14. Provincially Owned and Operated Reservoirs

Source Supply for:	Reservoir	Approximate Date of Impoundment	Live storage (dam^3)	Live storage (acre-feet)
Bow River Irrigation District	Little Bow	1920	21,080	17,090
	McGregor	1914	351,060	284,600
	Travers *	1954	104,640	84,830
	Total Storage		**476,780**	**386,520**
Lethbridge Northern Irrigation District	Keho	1920	95,640	77,530
	Oldman River *	1991	490,180	397,390
	Total Storage		**585,820**	**474,920**
Ross Creek Irrigation District	Cavan	1950	4,630	3,750
Mountain View, Leavitt, Aetna	Payne	1942	8,690	7,040
St. Mary Project (SMRID, MID, TID, RID)	Jensen	1948	19,000	15,400
	Milk River Ridge	1957	127,300	103,200
	St. Mary *	1951	369,310	299,400
	Waterton *	1965	111,200	90,150
	Total Storage		**626,810**	**508,150**
Other Multi-purpose	Chain Lakes *	1966	14,680	11,900
	Twin Valley Dam *	2003	60,700	49,210
	Pine Coulee	1998	51,000	41,350
	Women's Coulee	1949	360	290
	Total Storage		**126,740**	**102,750**
Grand Total			**1,829,470**	**1,483,130**

Note: * denotes on-stream storage reservoir

Table 15. Hydroelectric Plants Associated with Water Distribution Works

Location	Commission Date	Owner	Capacity (megawatts)
Oldman Reservoir	2003	ATCO Power	32
Waterton Reservoir	1992	TransAlta	3
Belly River Chute	1991	TransAlta	3
St. Mary Reservoir	1992	TransAlta	2
Taylor Coulee Chute (Jensen Reservoir)	2000	TransAlta	13
Raymond Reservoir	1994	Irrican Power	18
Chin Chute (Chin Reservoir)	1994	Irrican Power	11
SMRID - Main Canal Drops #4, #5 and #6	2004	Irrican Power	7
Total			**89**

Table 16. Private Water Licences for Irrigation in Alberta

There are 2,868 individual irrigation projects, outside of the 13 irrigation districts, irrigating approximately 303,804 acres in Alberta. These projects vary in size from 1 acre to over several thousand acres of agricultural or horticultural production. Each of these projects is licensed to an individual, a group of producers or to private or public lands (ie. golf courses or parks). The agricultural feasibility of these projects is reviewed by Alberta Agriculture and Forestry and the licencing is regulated by Alberta Environment and Parks.

RIVER BASIN	Total Acres Irrigated	No. of Licences 1 to 100 ac.	No. of Licences 101 to 300 ac.	No. of Licences over 300 ac.	Total No. of Licences
ATHABASCA RIVER	**1,985**	**43**	**6**	**0**	**49**
MILK RIVER	**18,886**	**98**	**43**	**14**	**155**
NORTH SASKATCHEWAN RIVER	**27,041**	**313**	**55**	**15**	**383**
PEACE RIVER	**3,364**	**67**	**9**	**0**	**76**
SOUTH SASKATCHEWAN RIVER					
- Bow River	25,760	148	60	18	226
- Little Bow River	27,836	125	43	25	193
- Lower Oldman River	17,421	24	28	14	66
- Red Deer River	45,176	417	90	18	525
- South Saskatchewan River	47,176	529	80	24	633
- Upper Oldman River	7,658	64	20	4	88
- Waterton / Belly / St. Mary Rivers	51,759	136	68	19	223
- Willow Creek	29,742	157	79	15	251
South Saskatchewan River Total	**252,528**	**1,600**	**468**	**137**	**2,205**
Total	**303,804**	**2,121**	**581**	**166**	**2,868**

Notes: – upper Oldman reach is defined as upstream of the Belly River confluence
– lower Oldman reach is defined as downstream of the Belly River confluence
– 25,000 acres from the Waterton / Belly / St. Mary Rivers category is for the Blood Tribe Agricultural Project
– does not include irrigation licences issued to irrigation districts in southern Alberta
– data are obtained from Alberta Environment and Parks
– licence authorization as of January 2014

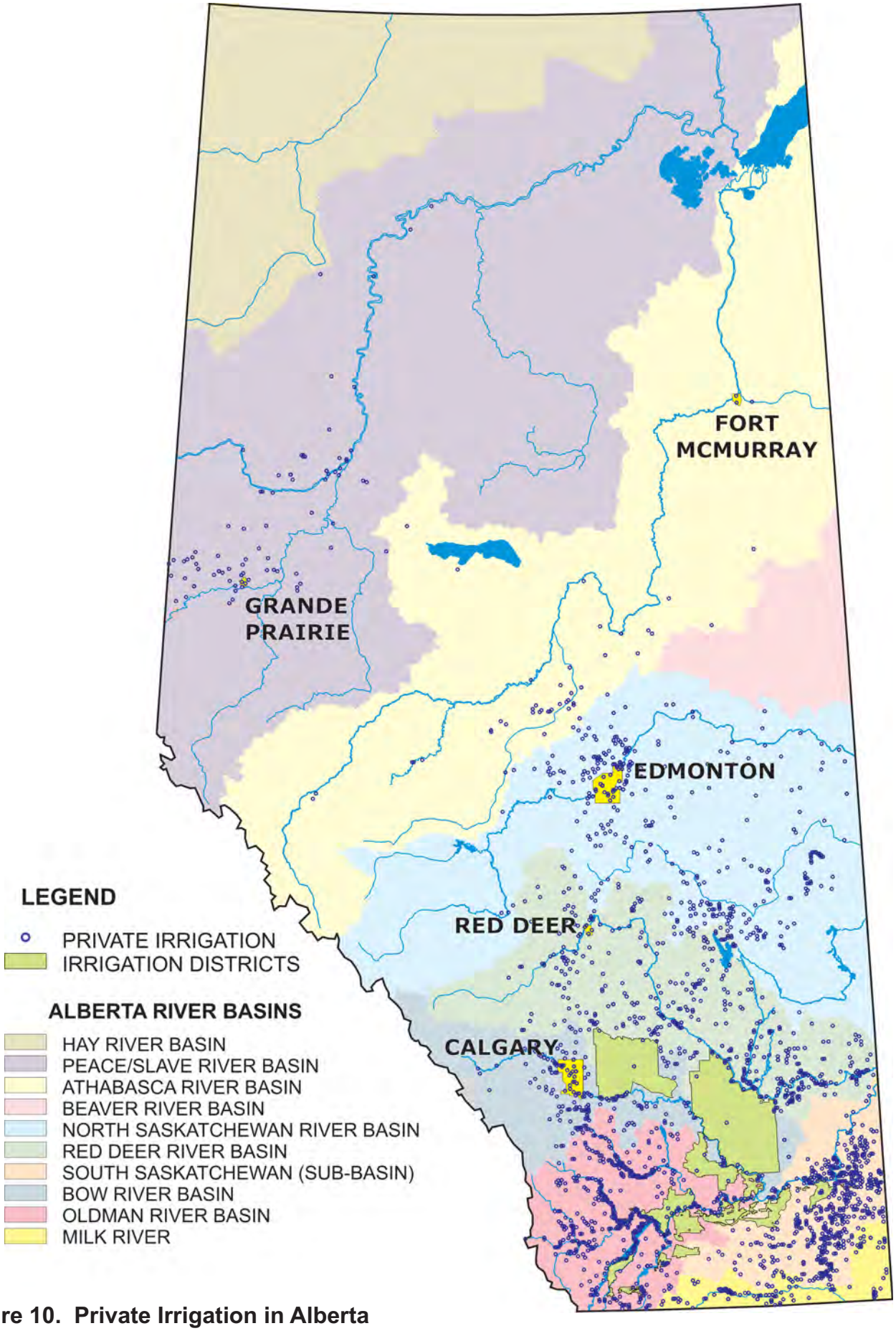


Figure 10. Private Irrigation in Alberta

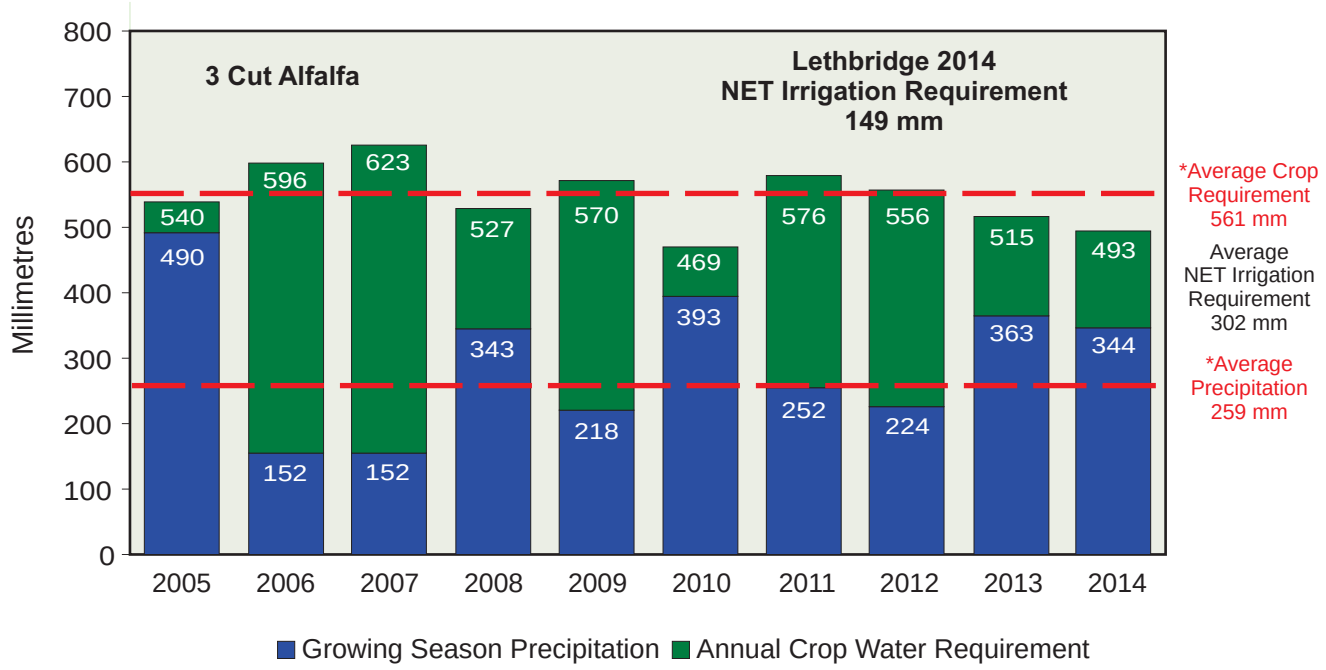


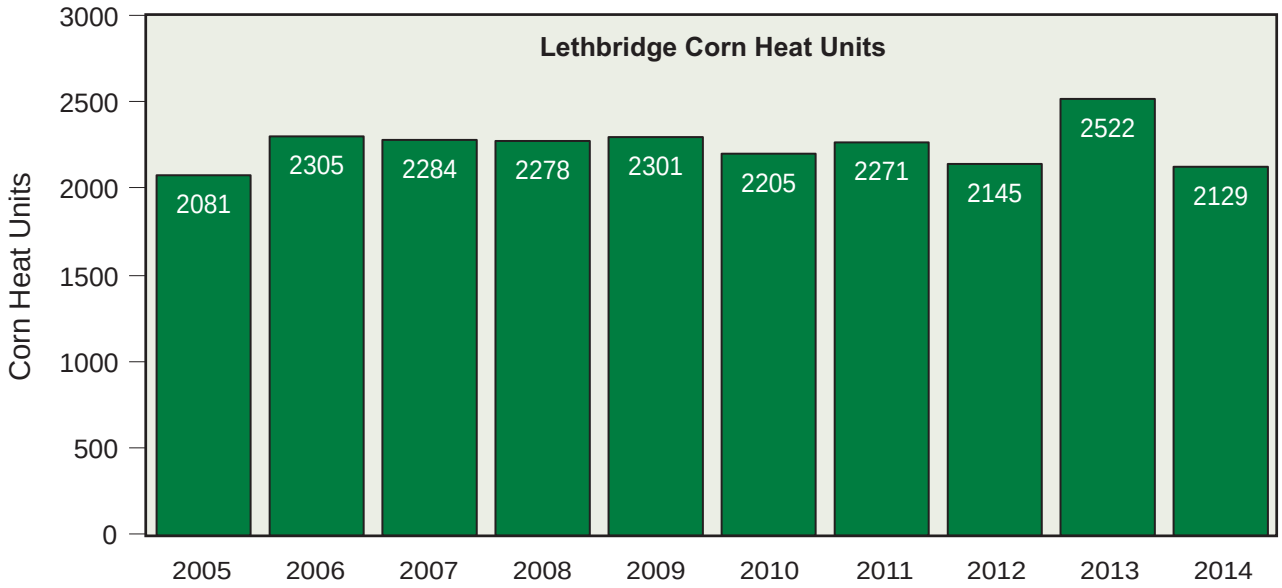
Figure 11. Lethbridge Optimum Crop Water and Net Irrigation Requirements (2005 - 2014)

Note: The high water use crop, 3 cut alfalfa is used in these examples because this crop's annual growing season closely coincides with the annual irrigation season.

The difference between the total crop water requirement and total precipitation is the NET irrigation requirement.

*The average crop requirement and average precipitation are from the period 1997 to 2014.

Seasonal precipitation from May 1 to September 30.



Note: Total Corn Heat Units (CHU) starting May 15 until first frost (-2°C)

Figure 12. Lethbridge Corn Heat Units (2005 - 2014)

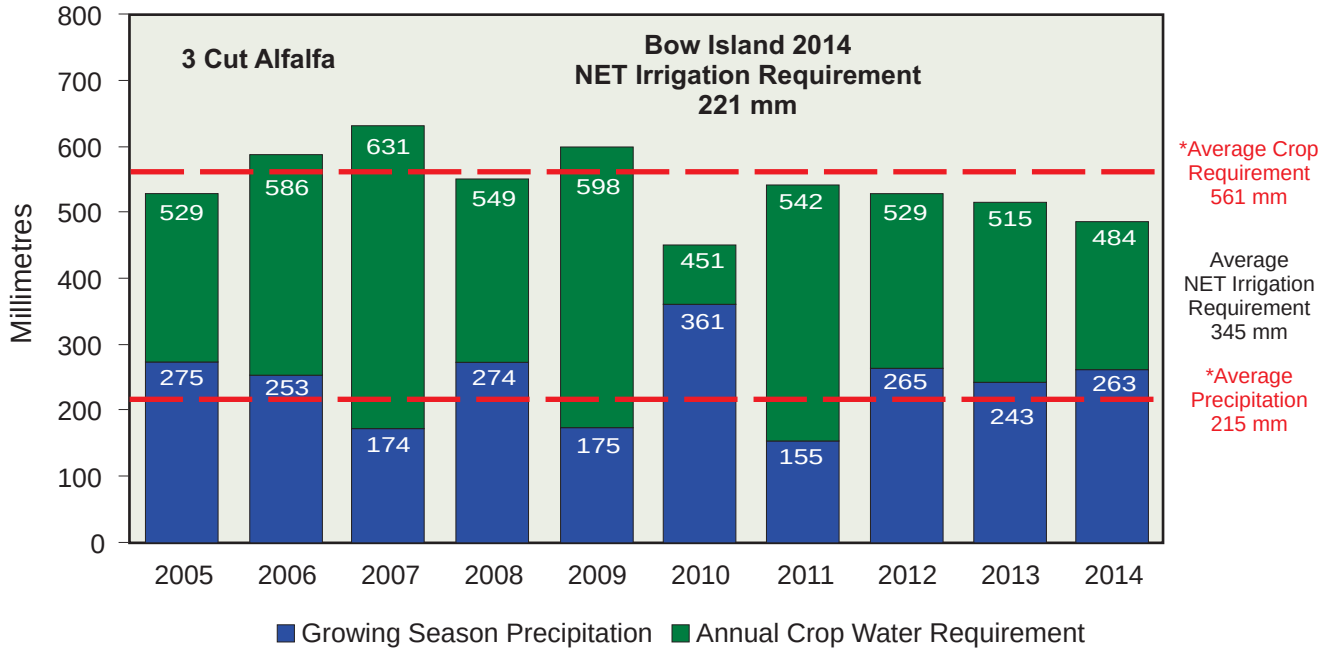


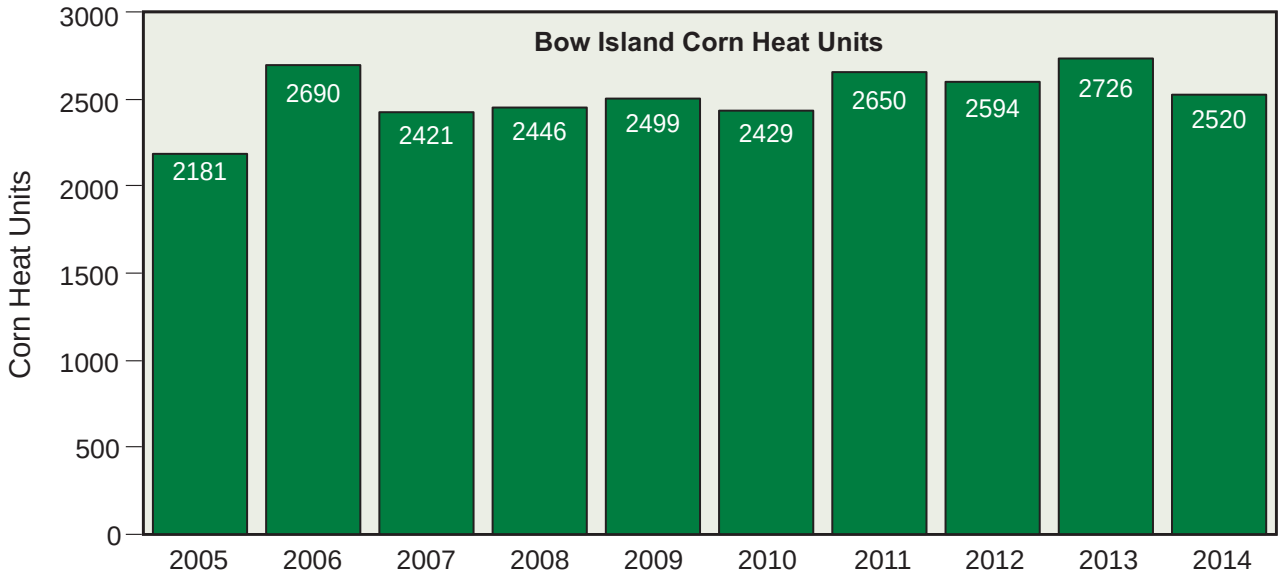
Figure 13. Bow Island Optimum Crop Water and Net Irrigation Requirements (2005 - 2014)

Note: The high water use crop, 3 cut alfalfa is used in these examples because this crop's annual growing season closely coincides with the annual irrigation season.

The difference between the total crop water requirement and total precipitation is the NET irrigation requirement.

*The average crop requirement and average precipitation are from the period 1997 to 2014.

Seasonal precipitation from May 1 to September 30.



Note: Total Corn Heat Units (CHU) starting May 15 until first frost (-2°C)

Figure 14. Bow Island Corn Heat Units (2005 - 2014)

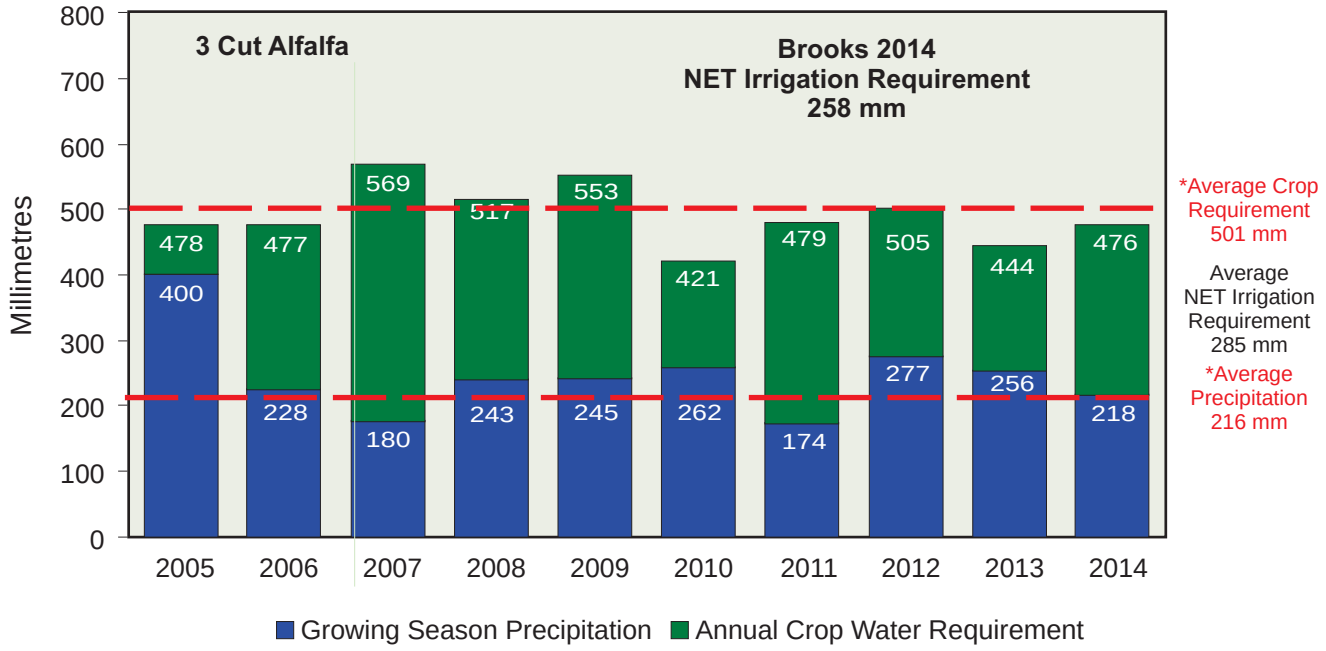


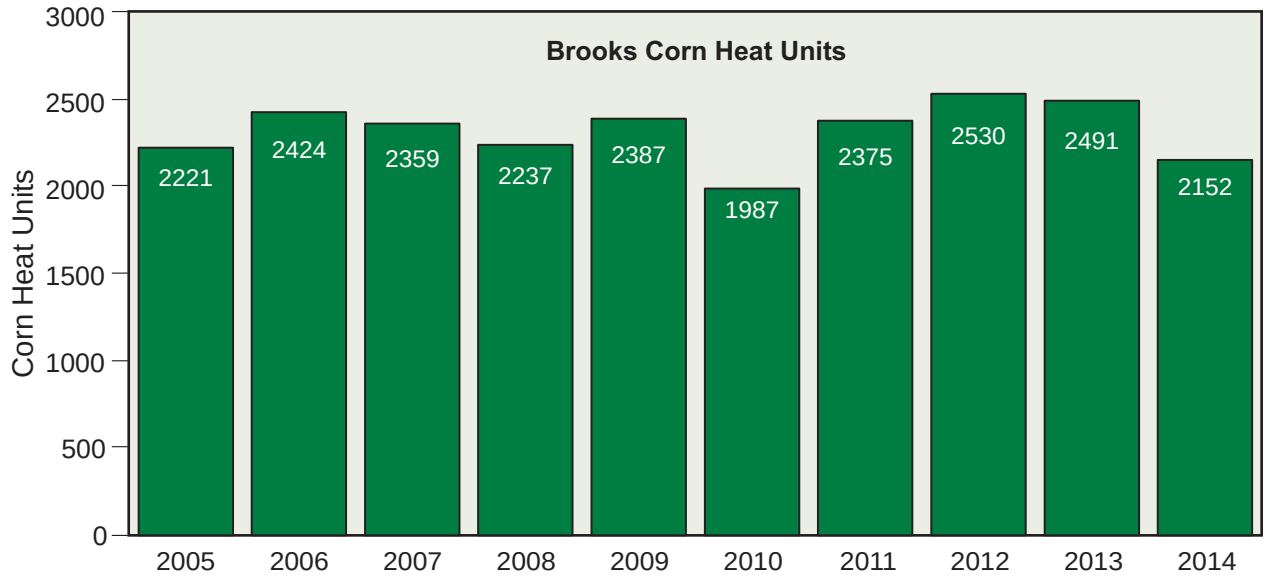
Figure 15. Brooks Optimum Crop Water and Net Irrigation Requirements (2005 - 2014)

Note: The high water use crop, 3 cut alfalfa is used in these examples because this crop's annual growing season closely coincides with the annual irrigation season.

The difference between the total crop water requirement and total precipitation is the NET irrigation requirement.

*The average crop requirement and average precipitation are from the period 1997 to 2014.

Seasonal precipitation from May 1 to September 30.



Note: Total Corn Heat Units (CHU) starting May 15 until first frost (-2°C)

Figure 16. Brooks Corn Heat Units (2005 - 2014)

Table 17. Historical Rainfall in Southern Alberta (April 15 to October 15)

AREA	MAXIMUM RAINFALL (mm)	MINIMUM RAINFALL (mm)	NORMAL RAINFALL* (mm)	**2014 RAINFALL (mm)**	**2014 % OF NORMAL**
Lethbridge	534 (1978)	71 (2001)	281	**381**	**136%**
Bow Island	439 (1993)	112 (2001)	256	**283**	**111%**
Brooks	484 (2005)	87 (2001)	242	**238**	**98%**

Note: * Normal rainfall 1970 - 2014

Table 18. Historical Corn Heat Units in Southern Alberta (May 15 to First -2° C Frost)

AREA	MAXIMUM CHU (2005-2014)	MINIMUM CHU (2005-2014)	LAST TEN YEAR AVERAGE*	**2014 CHU**	**2014 % OF LAST TEN YEAR AVERAGE**
Lethbridge	2522 (2013)	2081 (2005)	2252	**2129**	**95%**
Bow Island	2726 (2013)	2181 (2005)	2516	**2520**	**100%**
Brooks	2530 (2012)	1987 (2010)	2316	**2152**	**93%**

Note: * Last ten year average 2005 - 2014

Table 19. Frost Free Period (0° C) in Southern Alberta

AREA	AVERAGE LAST FROST	AVERAGE FIRST FROST	AVERAGE FROST FREE DAYS*	**2014 LAST FROST**	**2014 FIRST FROST**	**2014 FROST FREE DAYS**	**2014 % OF NORMAL**
Lethbridge	May 11	Sept 21	133	**May 13**	**Sept 12**	**122**	**91%**
Bow Island	May 11	Sept 22	134	**May 12**	**Oct 2**	**143**	**107%**
Brooks	May 15	Sept 19	127	**May 17**	**Sept 11**	**117**	**92%**

Note: * Average frost free days 1971 - 2000

Table 20. Frost Free Period (-2° C) in Southern Alberta

AREA	AVERAGE LAST FROST	AVERAGE FIRST FROST	AVERAGE FROST FREE DAYS*	**2014 LAST FROST**	**2014 FIRST FROST**	**2014 FROST FREE DAYS**	**2014 % OF NORMAL**
Lethbridge	May 4	Sept 12	128	**May 7**	**Sept 12**	**128**	**87%**
Bow Island	May 4	Oct 3	144	**May 12**	**Oct 3**	**144**	**96%**
Brooks	May 9	Sept 12	118	**May 17**	**Sept 12**	**118**	**86%**

Note: Average frost free days 1971 - 2000

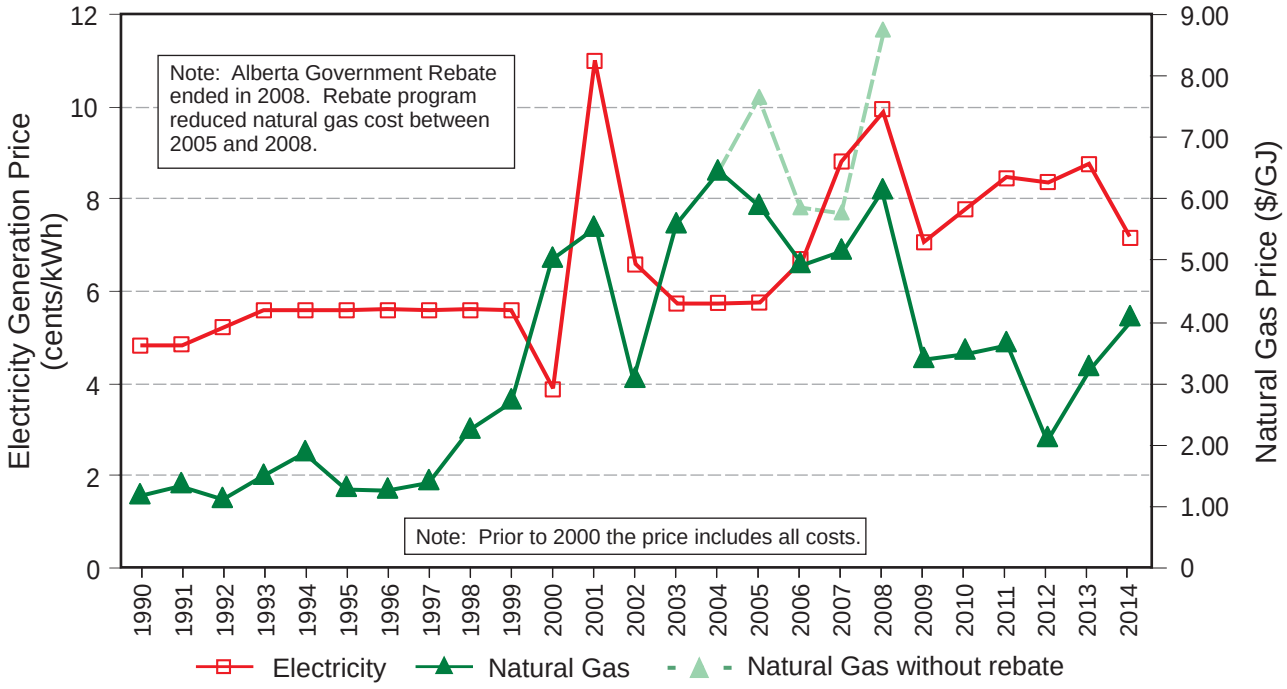
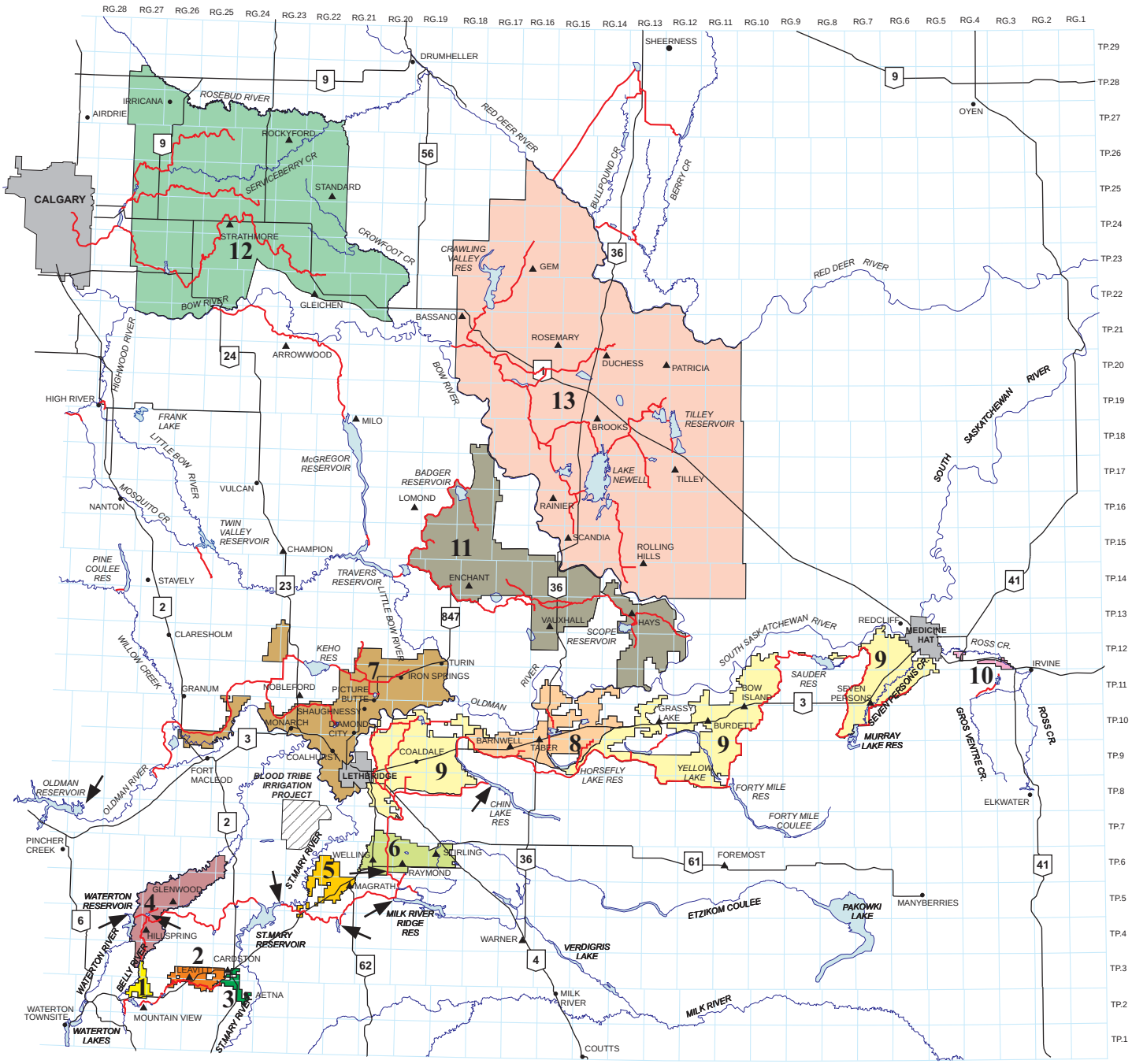


Figure 17. Historical Irrigation Energy Prices (average prices from May to September)

Table 21. Energy Type Used in the Irrigation Districts (acres irrigated by energy type)

Energy Type	BRID	EID	LNID	MID	RCID	RID	SMRID	TID	UID	WID	Average Energy Type
Electricity	74.7% 173,658	47.8% 142,246	39.9% 71,305	8.2% 1,499		39.7% 17,762	63.2% 236,551	62.0% 48,915	55.7% 11,686	34.1% 27,461	55.0%
Natural Gas	11.4% 26,588	23.4% 69,642	34.4% 61,477	58.4% 10,686		45.9% 20,539	31.4% 117,590	33.4% 26,327	3.0% 621	31.9% 25,657	27.0%
Diesel	2.7% 6,345	3.7% 10,999	0.5% 869	0.0% 0		0.4% 186	0.6% 2,290	0.8% 635	0.6% 132	10.3% 8,262	2.2%
Gravity	5.6% 12,983	19.0% 56,700	2.0% 3,568	16.9% 3,094		7.5% 3,333	1.7% 6,464	3.0% 2,365	21.6% 4,536	7.3% 5,914	7.5%
Gravity Pressure Pipeline	3.8% 8,741	2.1% 6,278	13.2% 23,667	16.3% 2,991	100.0% 1,075	0.5% 228	2.8% 10,289	0.5% 415	17.0% 3,565	8.6% 6,925	4.9%
Pump Pressure Pipeline	0.4% 877	2.3% 6,786	7.6% 13,638	0.0% 0		0.0% 0	0.0% 0	0.0% 0	2.1% 451	0.2% 125	1.6%
Other*	0.4% 999	0.9% 2,619	0.6 1,093	0.2% 30		1.9% 839	0.2% 914	0.2% 170	0.0% 9	7.7% 6,180	1.0%
Unknown	1.0% 2,231	0.9% 2,577	1.7% 3,032	0.0% 0		4.1% 1,839	0.0% 0	0.0% 31	0.0% 0	0.0% 0	0.7%
Total Acres	232,422	297,847	178,649	18,300	1,075	44,726	374,099	78,858	20,999	80,524	1,328,129

Notes: – * other includes gasoline, propane or butane
– AID, LID, and MVID did not report any data



1 Mountain View Irrigation District
2 Leavitt Irrigation District
3 Aetna Irrigation District
4 United Irrigation District
5 Magrath Irrigation District
6 Raymond Irrigation District
7 Lethbridge Northern Irrigation District
8 Taber Irrigation District
9 St.Mary River Irrigation District
10 Ross Creek Irrigation District
11 Bow River Irrigation District
12 Western Irrigation District
13 Eastern Irrigation District

Hydroelectric plants associated with water distribution works

Main canals

There are 13 irrigation districts in southern Alberta providing water to 1,412,836 assessed acres of farmland. The infrastructure within these irrigation districts is comprised of approximately 7,917 kilometres of conveyance system, of which 339 kilometres are owned and operated by Alberta Environment and Sustainable Resource Development.

Figure 18. Alberta's Irrigation Districts

Data Dictionary

Actually irrigated: A parcel of assessed land that includes an irrigation system and received water during the current year, as reported by the irrigation districts.

Acres covered by an irrigation system: A parcel of land recorded as having irrigation acres and has some type of irrigation system.

> Irrigated this year: A parcel of land that received irrigation water in the current year.
>
> Not irrigated this year: A parcel of land that did not receive irrigation water in the current year.

Acres with no irrigation system: A parcel of land recorded as having irrigation acres without any type of system.

Assessment roll acres: These include irrigation, terminable, and annual acres. To learn more about assessments, link to the Alberta Irrigation Districts Act.

Irrigation acres: Acres in a parcel recorded on the assessment roll as irrigation acres. Subject to an irrigation charge.

> **Terminable acres:** Acres in a parcel recorded on the assessment roll as terminable acres. The agreement is terminable at the option of either party by giving notice before March 1. Subject to a terminable agreement charge.
>
> **Annual acres:** Acres in a parcel recorded on the assessment roll as annual acres. The agreement expires at the end of the calendar year. Subject to an annual agreement charge.

Canal Evaporation: Water lost through the delivery system by vaporizing from the water surface of an open channel.

Canal Seepage: Water lost through the delivery system through the sides and bottom of an open channel.

Constructed Drain: A man-made open channel or pipeline that provides a means to move unused water away from irrigation works.

Corn Heat Unit: A numerical measure of the growth response of a corn plant to daily minimum and maximum temperatures. Zero corn heat units are calculated when daily minimum temperatures are below 4.4°C and daily maximum temperatures are below 10°C. They are calculated on a daily basis and accumulated annually starting on May 15 and continuing until the first killing frost of -2°C.

Crop Requirement: The amount of water a crop needs to transpire in response to meteorological conditions.

Crop Type: Plants that are grown in the irrigation districts are grouped into four categories: cereals, forages, oil seeds, specialty crops, and other.

> **Cereals:** Annual grasses grown for their grain. Crops reported include barley, CPS wheat, durum wheat, grain corn, hard red spring wheat, malt barley, oats, rye, soft wheat, triticale, and winter wheat.
>
> **Forages:** Plants that are consumed by livestock. Crops reported include alfalfa (two & three cut, hay, and silage), barley silage, brome hay, corn silage, grass hay, green feed, milk vetch, millet, native pasture, oats silage, sorghum/sudan grass, tame pasture, timothy hay, and triticale silage.
>
> **Oil Seeds:** Plants that are grown for the oil contained in the seeds. Crops reported include canola, flax, and mustard.

Specialty Crops: Include fruits and vegetables, horticulture, seed production, pulse crops, and nursery crops. Crops reported include alfalfa seed, canola seed, carrots, catnip, chick peas, dill, dry beans, dry peas, faba beans, fresh sweet corn, fresh peas, grass seed, hemp, lawn turf, lentils, market gardens, mint, nursery, onions, potatoes, pumpkins, safflower, seed potatoes, small fruit, soy beans, sugar beets, and sunflower.

Other: Other reported include miscellaneous, non-crop, summer fallow, and unknown.

Delivered for Irrigation: All water delivered by an irrigation district through its infrastructure for the purpose of irrigation.

Expansion Limit: The total number of irrigation acres plus acres subject to a terminable agreement in an irrigation district; the total irrigated area of an irrigation district cannot exceed this limit as per the Irrigation Districts Act.

Frost Free Period (0°C): Continuous period of time where the minimum daily temperature does not drop below 0°C.

Frost Free Period (-2°C): Continuous period of time where the minimum daily temperature does not drop below -2°C.

Gross Annual Diversion: All water diverted into the works of an irrigation district from a water source. It includes water used directly for irrigation purposes, reservoir filling, and the water supplied or licenced to municipal, domestic, other agricultural, industrial, and environmental uses.

Irrigation District: A corporation that operates under the authority of the Alberta Irrigation Districts Act whose primary purpose is to convey and deliver water through irrigation works, divert and use quantities of water within the terms of its licence, and to construct, operate and maintain irrigation works. An irrigation district is the geographical area consisting of the parcels of land included in the district.

Irrigation District Annual Water Rate: The annual amount charged by an irrigation district per assessed acre of land for irrigation water. Some districts levy additional surcharges for services including pipeline and/or pressurized delivery, using more water than allocated, and automated screen cleaning.

Irrigation District Works: Any structure, device, contrivance or thing or any artificial body of water or watercourse used or to be used by a district.

Rehabilitated: Includes membrane-lined canals, concrete-lined canals, earth canals, closed pipelines, and open pipelines.

Membrane-lined canal: An open channel that has been coated with a membrane material to prevent water seepage.

Concrete-lined canal: An open channel that has been coated with concrete to prevent water seepage.

Earth canal: An open channel that has been coated with a natural low porosity material that reduces water seepage.

Closed pipeline: A buried conduit that is closed at the outlet.

Open pipeline: A buried conduit that is open at the outlet.

Un-rehabilitated: Consists of un-rehabilitated canals.

Un-rehabilitated canal: An open channel that was constructed through the native material.

Irrigation method: Irrigation systems are grouped into five categories: high pressure pivot sprinkler, low pressure pivot sprinkler, wheel move sprinkler, gravity, and other.

High pressure pivot sprinkler includes:

Pivot high pressure: Centre pivot irrigation system with high pressure (greater than 50 pounds per square inch (psi)) impact sprinklers.

Pivot high pressure – corner arm: Centre pivot irrigation system with high pressure (greater than 50 psi) impact sprinklers with the addition of a secondary pivotal arm connected to the end of the centre pivot boom.

Linear – high pressure: Linear move irrigation pivot system with high pressure (greater than 50 psi) impact sprinklers that irrigate a rectangular field.

Low pressure pivot sprinkler includes:

Pivot medium pressure: Centre pivot irrigation system with medium pressure (between 30 and 50 psi) impact sprinklers.

Pivot medium pressure – corner arm: Centre pivot irrigation system with medium pressure (between 30 and 50 psi) impact sprinkler nozzles with the addition of a secondary pivotal arm connected to the end of the centre pivot boom.

Pivot low pressure: Centre pivot irrigation system with low pressure (less than 30 psi) spray nozzles.

Pivot low pressure – corner arm: Centre pivot irrigation system with low pressure (less than 30 psi) spray nozzles with the addition of a secondary pivotal arm connected to the end of the centre pivot boom.

Linear – low pressure: Linear move pivot irrigation system with low pressure (less than 30 psi) spray nozzles that irrigates a rectangular field.

Wheel move includes:

Wheel move – two laterals: Two wheel mounted pipelines with sprinklers along their length per parcel of land.

Wheel move – four laterals: Four wheel mounted pipelines with sprinklers along their length per parcel of land.

Gravity includes:

Gravity – developed: surface irrigation system with some land modification (leveling plus construction of border strips, furrows, basin), where the soil surface is used to distribute and infiltrate the applied water.

Gravity undeveloped: surface irrigation system without any land modification (leveling) or application control (furrows, border strips, dykes).

Other includes:

Volume gun – stationary: Large volume sprinkler stationed at a single point.

Volume gun – traveller: Large volume sprinkler mounted on wheels.

Solid set: Sprinklers mounted on risers connected to a buried pipe.

Hand move: Sprinklers mounted on risers connected to a surface pipe that can be moved.

Micro – spray – sprinkler: Spray emitter connected to a drip irrigation system.

Micro – drip – trickle: Drip emitter connected to a drip irrigation system.

Other application use: Water used for purposes other than irrigation.

Natural Drain: An open channel that exists as a natural watercourse that provides a means to move unused water away from irrigation works.

Net Requirement: The amount of water supplied by irrigation to meet the crop requirement.

Other Use: Any water delivered by an irrigation district for a use other than irrigation; this includes municipal, domestic, other agricultural, industrial, and environmental uses.

Percent of Licence: The percentage of the irrigation district's licence that was diverted in a year.

Replacement Cost: The cost in today's dollars to restore a piece of irrigation district infrastructure.

Reservoir Evaporation: Water lost from the surface of a reservoir by vaporization.

Reservoir Storage: Net change in irrigation district reservoir storage volume. Irrigation districts own and operate reservoirs to store irrigation water for release when there is insufficient diversion capacity to meet the demand for water. They are also used for normal district operations to stabilize flows and capture unused water for further use.

Return: Water returned by an irrigation district to the river system.

Total District Operations: Total volume of water used for irrigation district operations comprised of water delivered for irrigation, other uses, water lost to seepage and evaporation, and water returned.

Water Licence (Irrigation): Includes irrigation district and private licences.

> **Irrigation District Water Licence:** An authorization which permits the irrigation district to divert a certain volume of water, at a specific rate, from a watercourse into district owned conveyance and storage systems.
>
> **Private Irrigation Water Licence:** An authorization which permits a private irrigator to divert a certain volume of water, at a specific rate, from a watercourse to a private irrigation development project.

Water Licence Allocation (Irrigation District): The total volume of water that an irrigation district is licenced to divert annually.

Water Source: The origin of the watercourse that is diverted by an irrigation district.

Unit Conversion Factors

Imperial to Metric

1 acre = 0.405 ha
1 ac-ft = 1233.480 m^3
1 ac-ft = 1.234 dam^3
1 inch = 25.4 mm
1 mile = 1.609 km
1 lbs/ac-ft = 0.0004 kg/m^3
1 lbs = 0.454 kg

Metric to Imperial

1 ha = 2.471 acres
1 m^3 = 0.00081 ac-ft
1 dam^3 = 0.8107 ac-ft
1 mm = 0.0394 inches
1 km = 0.6214 miles
1 kg/m^3= 2713.7 lbs/ac-ft
1 kg = 2.205 lbs

Other

1 m^3 = 1000 L
1 dam^3 = 1000 m^3
1000 dam^3 = Giga L
1 km = 1000 m