



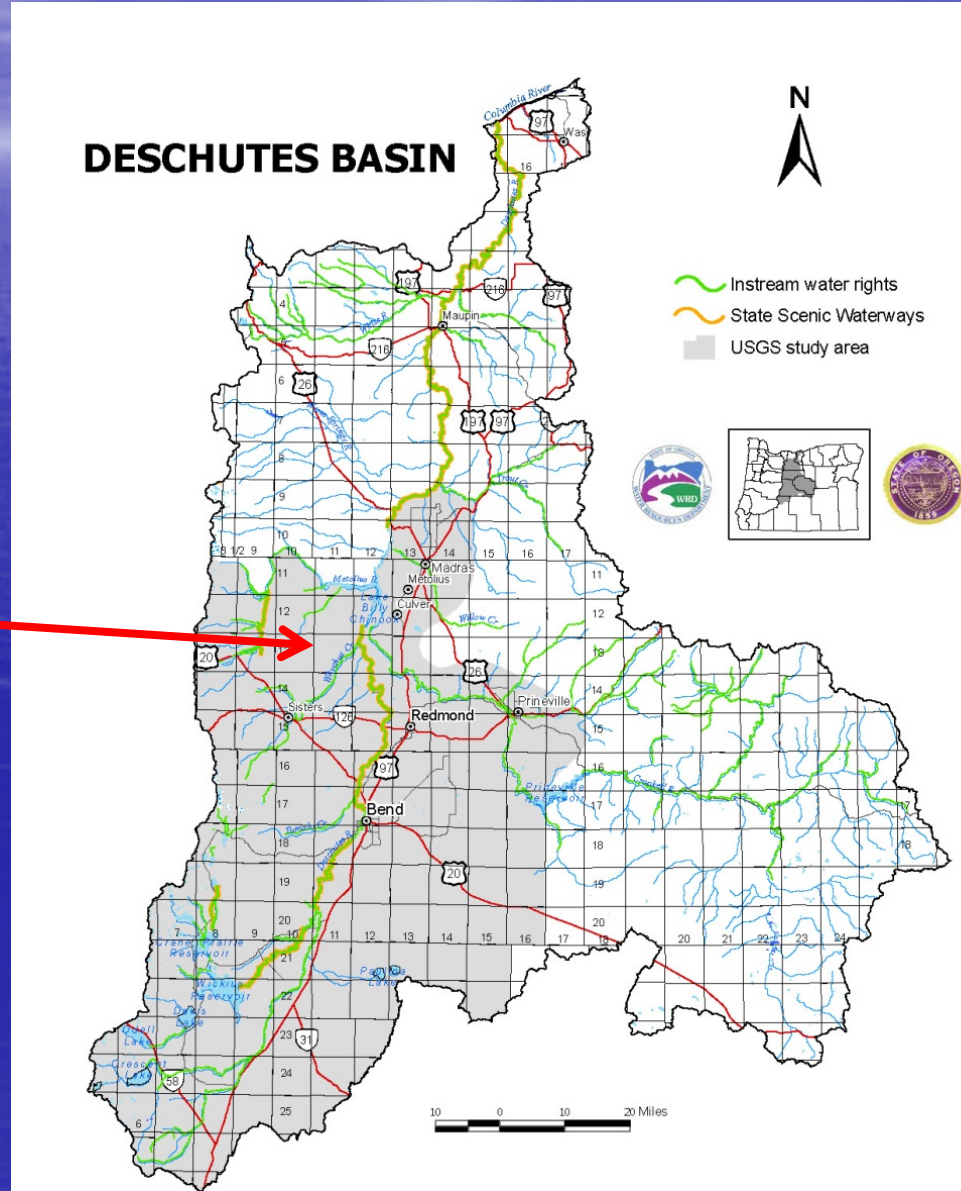
Deschutes Ground Water Mitigation Program

2012 Annual Review & Five Year Program Evaluation

Dwight French and Ken Stahr

History and Background

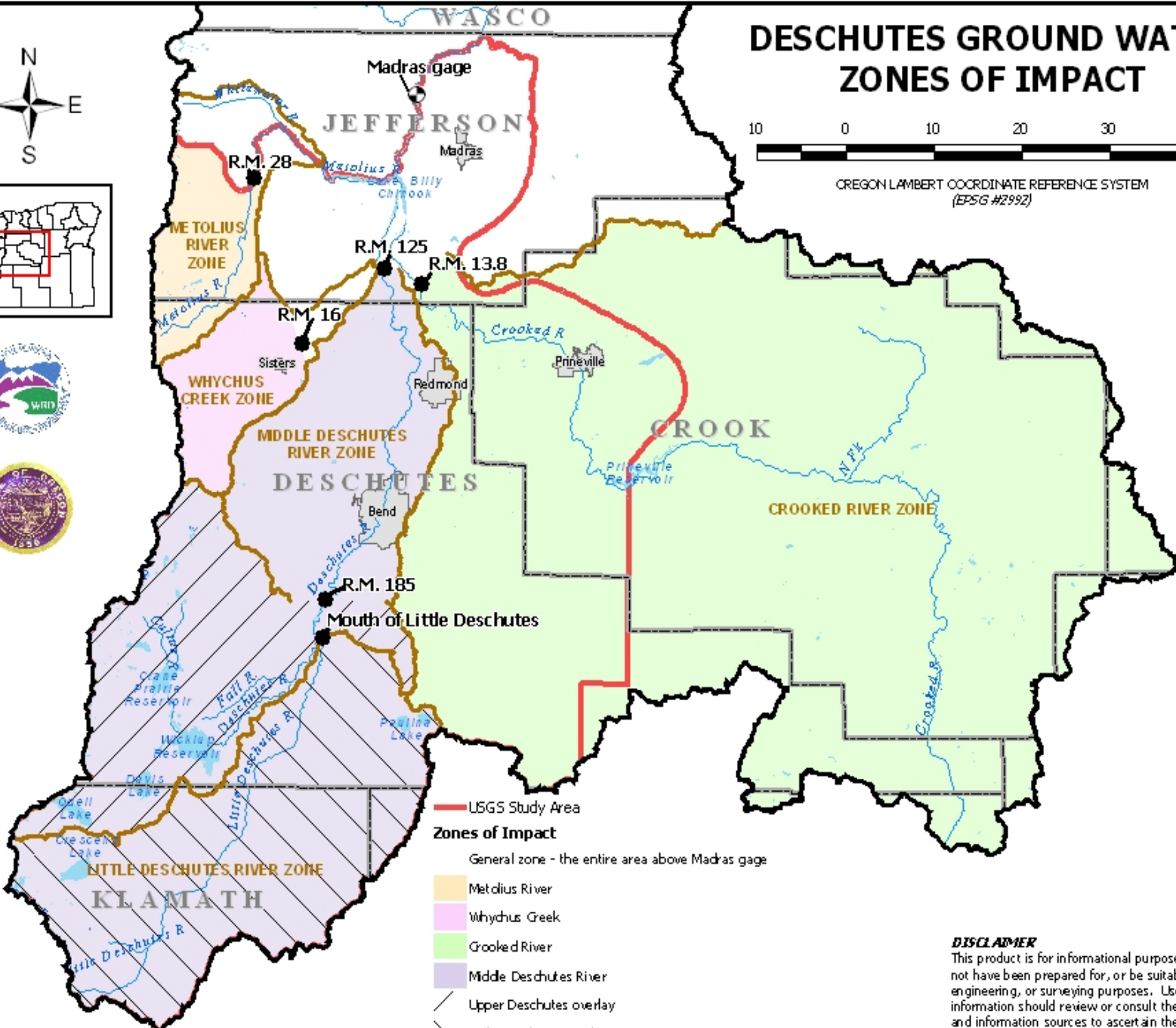
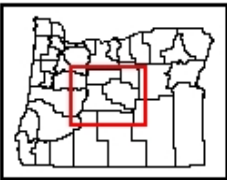
1. SWW & ISWR Protections
2. No SW Available
3. Deschutes Basin GW Study
4. Mitigation Program Developed
5. Annual and 5 year Reports



DESCHUTES GROUND WATER ZONES OF IMPACT



OREGON LAMBERT COORDINATE REFERENCE SYSTEM
(EPSG #2992)



- USGS Study Area
- Zones of Impact**
- General zone - the entire area above Madras gage
- Metolius River
- Whychus Creek
- Crooked River
- Middle Deschutes River
- Upper Deschutes overlay
- Little Deschutes overlay

DISCLAIMER
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Mitigation Program Goals:

(Page 5 of first 5 year report)

1. Maintain SWW flows + water rights including ISWR
2. Facilitate restoration in middle reach...
3. Sustain existing uses and accommodate growth



Elements of Mitigation Program

1. New ground water permits require mitigation
2. Identifies tools for providing mitigation
3. Establishes a system of mitigation credits
4. 200 CFS cap
5. Provides for establishment of mitigation banks
6. Requires annual evaluations and five year program reviews



Establishing New GW Uses

1. Application filed
2. Initial Review = X mitigation required (zone)
3. Applicant agrees or withdraws
4. Proposed Final Order
5. Final Order (cap debited)
6. Mitigation secured
7. Permit



2012 Annual Evaluation

- 1. Cooperation with other state agencies**
- 2. Implementation of the rules**
- 3. Ground water appropriations**
- 4. Streamflow monitoring**
- 5. Mitigation Bank Review**



Mitigation Program Numbers Through 2012

- 95 new groundwater permits issued
- 22 at FO stage
- 52 Active Mitigation Projects

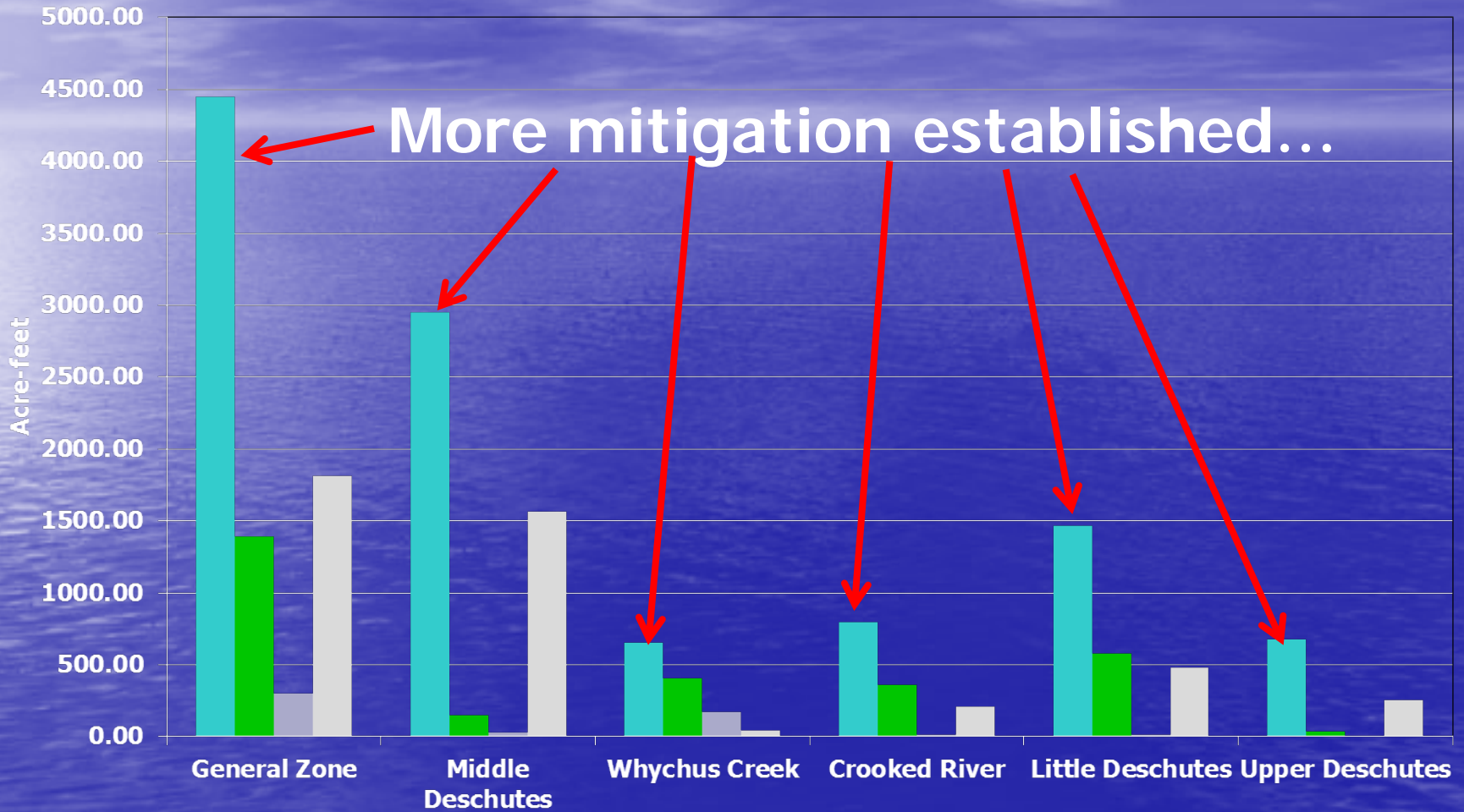


Sources of 52 Mitigation Projects

- 21 Instream Leases (temporary): 2414 AF
- 31 Instream Transfers (permanent): 3068 AF



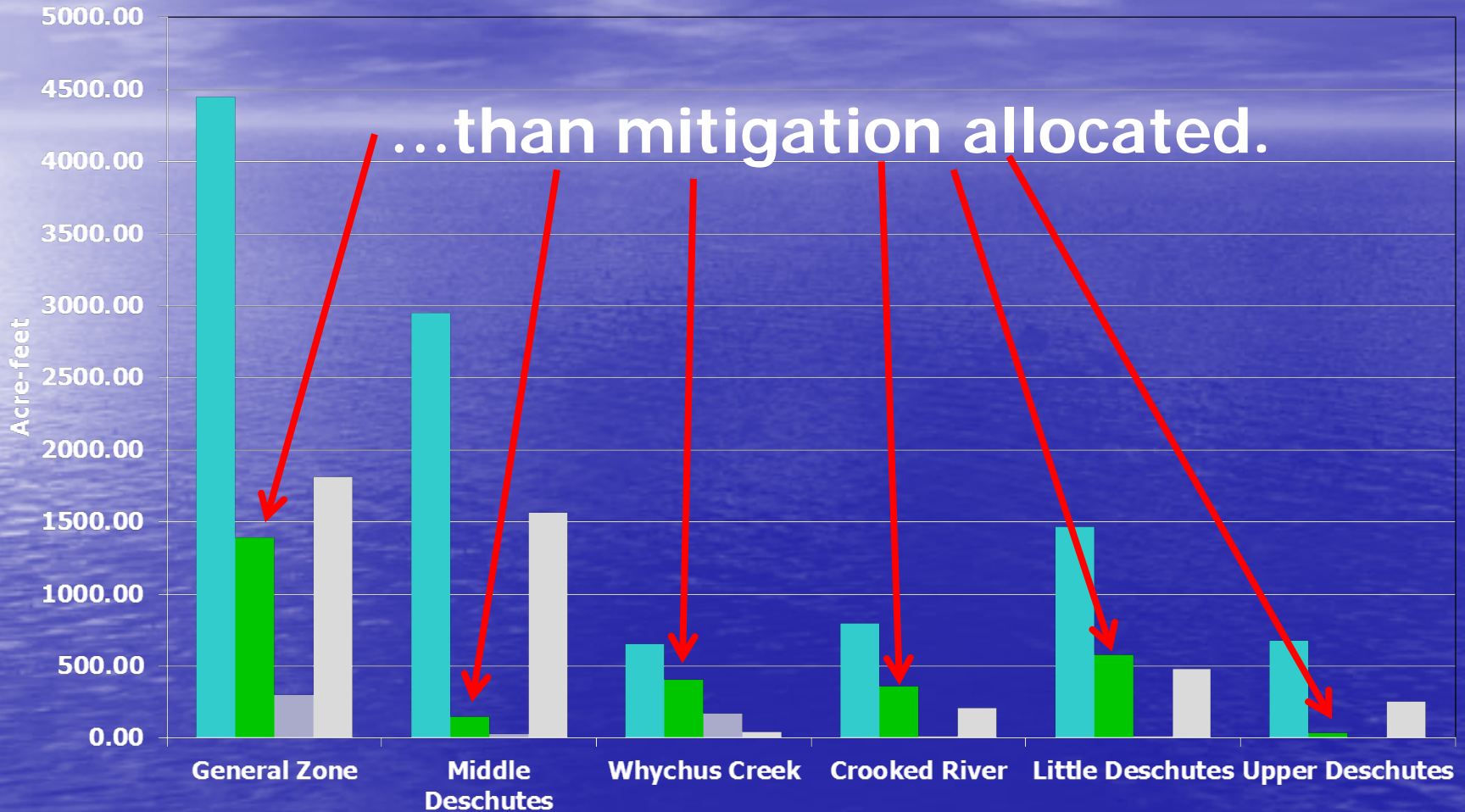
Mitigation Activity in the Deschutes Basin for 2012



■ Total Mitigation Established
 ■ Reserve Credits

■ Allocated Mitigation
 ■ Remaining Available Mitigation

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Five Year Mitigation Program Evaluation

2008 Through 2012



Elements of the 5 Year Review

1. Status of the 200 cfs Allocation Cap
2. Mitigation Water & Credits
3. Mitigation Zones of Impact
4. Mitigation Projects
5. Streamflow Compared to SWW and ISWR

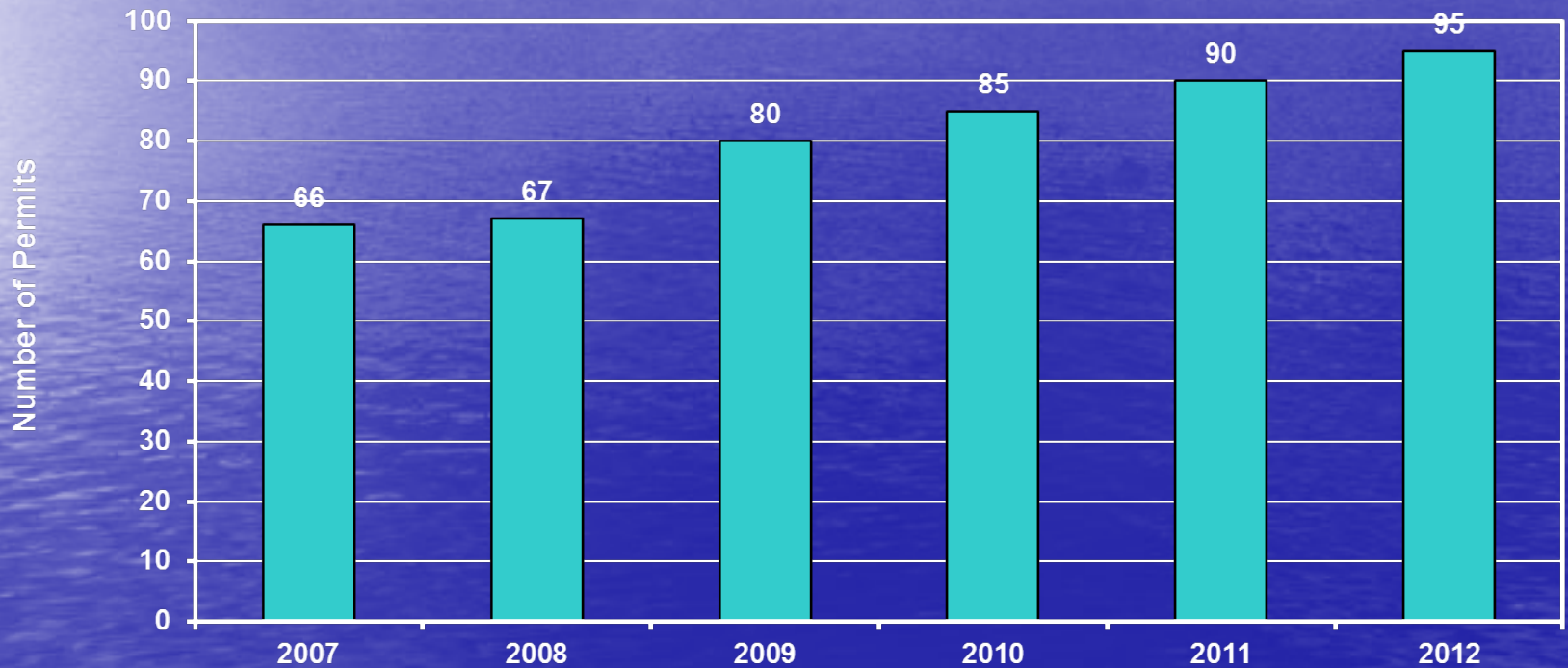


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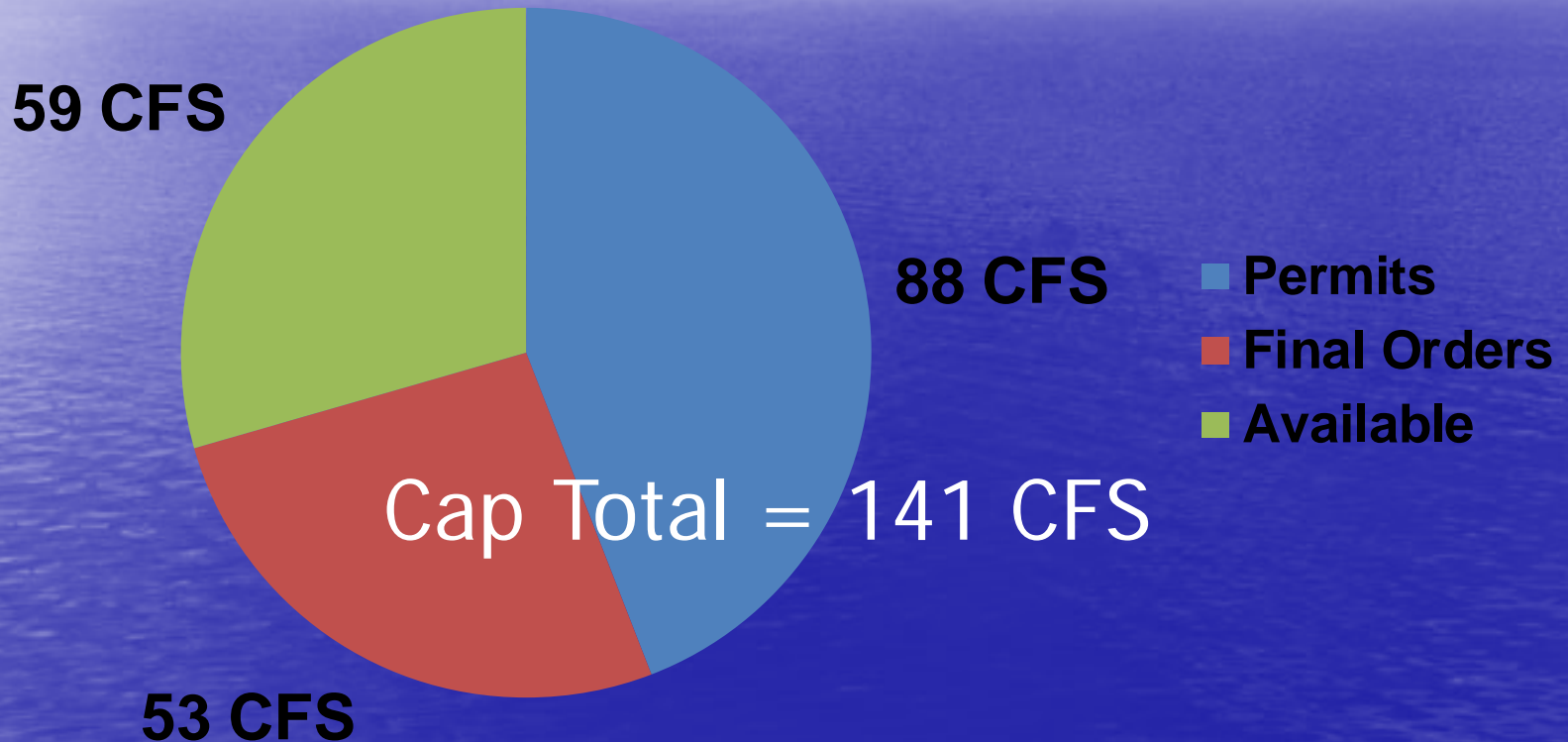
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Ground Water Permits Issued as a result of mitigation



Status of 200 CFS Cap



- Unofficial Cap Numbers:
- 12/31/12: Including Pending Apps = 1 CFS left
- 10/15/13: Including Pending Apps = 27 CFS left



Allocation Cap and Cancellation

- Division 522 adopted June 4, 2010
- Allowed CFS to be added back upon permit cancellation
 - Limited Cancellation to ORS 537.410
 - Did not include other cancellation statuses, including voluntary cancellation
- Cancellation limitation also affects reassignment of mitigation credits



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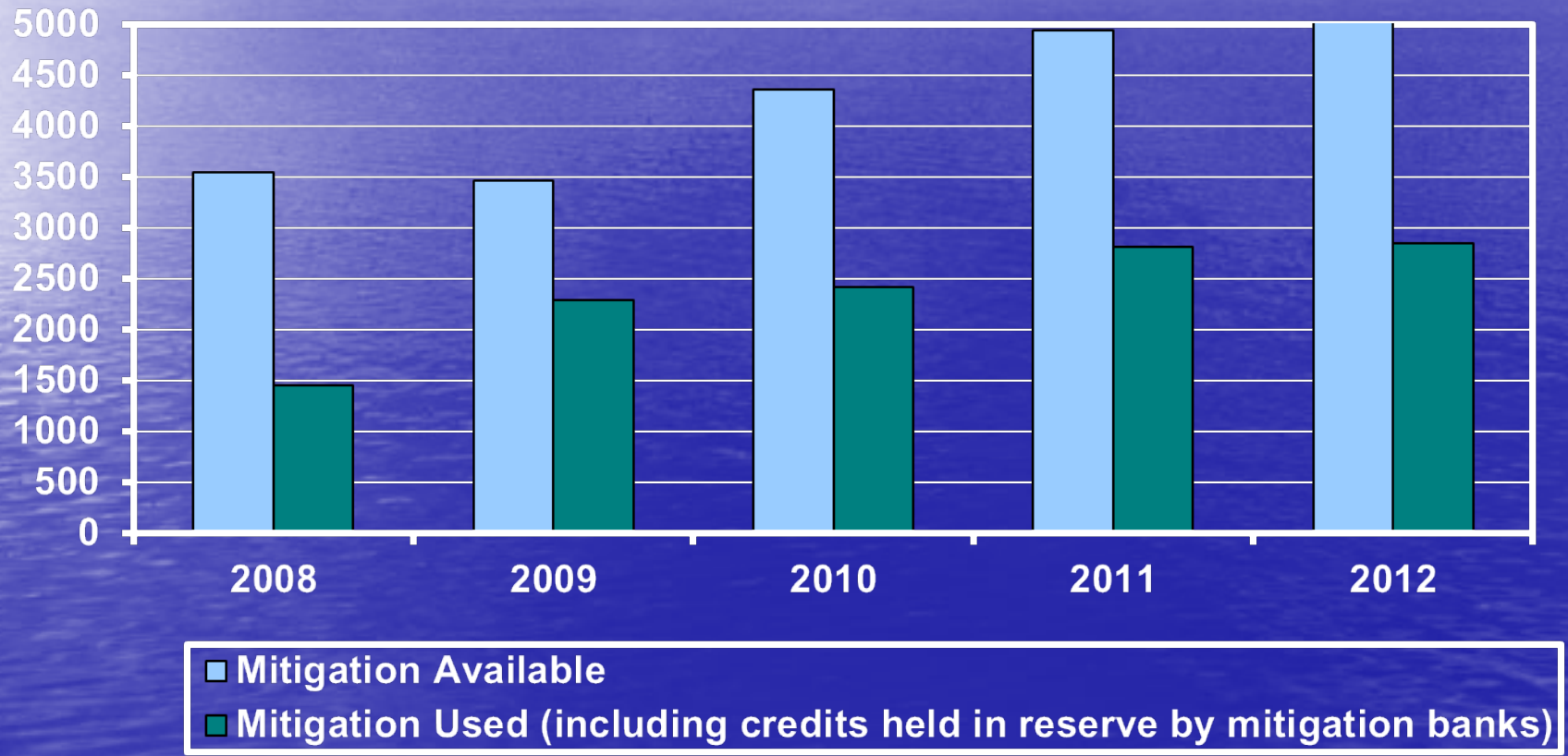


Mitigation Banks

- Two chartered banks:
 1. Deschutes River Conservancy
 - Only bank authorized for temporary credits
 - Approximately 50% of available mitigation through DRC
 2. Deschutes Irrigation LLC
 - No transactions via bank to date
 - Have provided assistance to ground water applicants

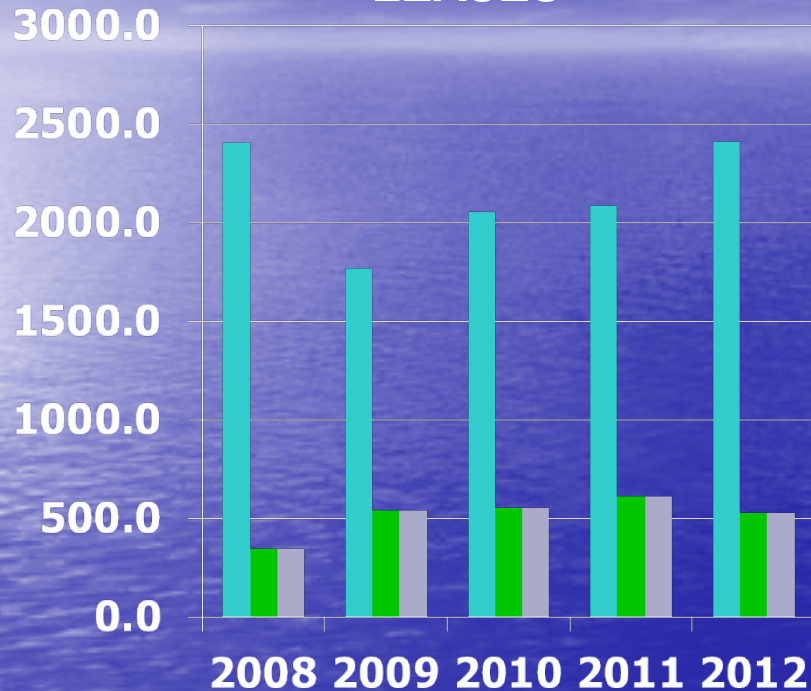


Mitigation Water and Credits



Mitigation Water and Credits

LEASES



- Mitigation Available
- Mitigation Used
- Mitigation held in "Reserve"

PERMANENT TRANSFERS



- Mitigation Available
- Mitigation Used



Elements of the 5 Year Review

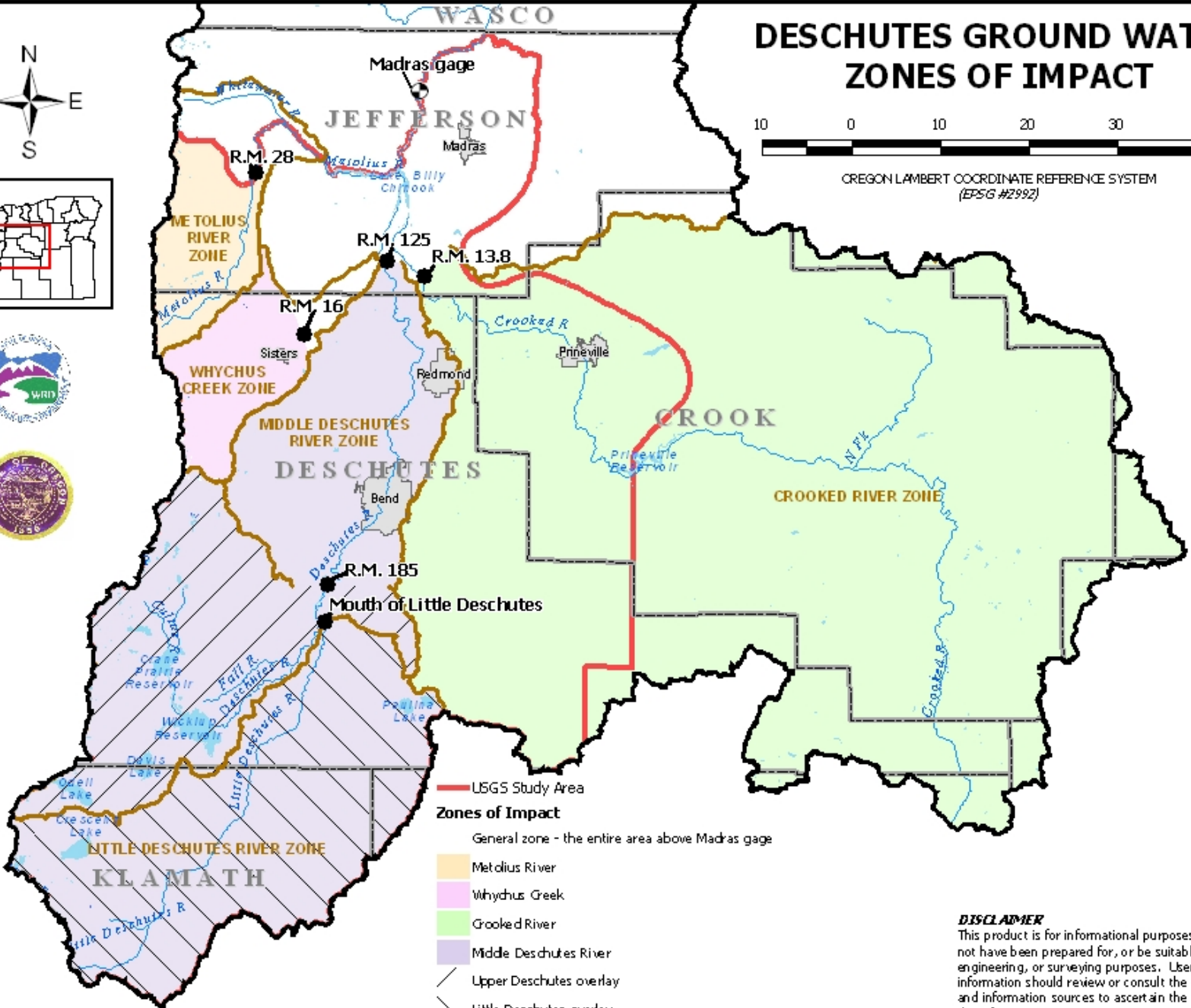
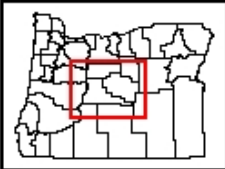
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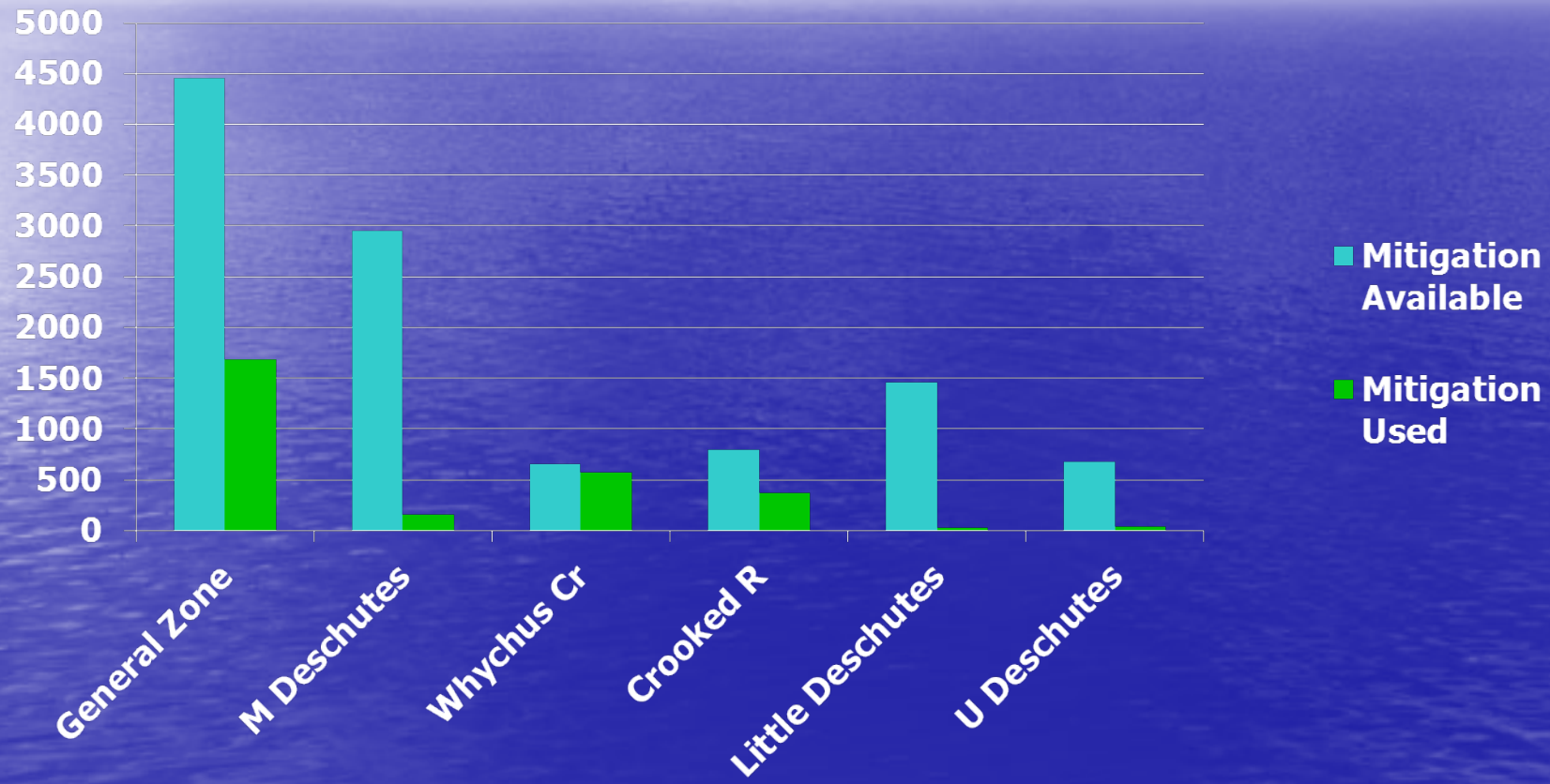
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Number of GW Permits by Zone

Zone of Impact	Number of Permits	Rate (cfs) Approved by Permit	Maximum Volume (AF) Approved by Permit	Total Mitigation Obligation (AF)
General	58	67.3	12,746.4	6,370.2
Middle Deschutes	8	0.92	221.5	129.8
Crooked River	10	14.80	5,680.7	2,385.5
Whychus Creek	11	4.40	1,213.7	585.5
Little Deschutes	3	0.48	368.3	13.2
Upper Deschutes	5	0.29	76.8	46.1
Metolius River	--	--	--	--
Totals	95	88.2	20,307.4	9,530.3



Mitigation Water by Zone



No mitigation in the Metolius zone

Mitigation Used includes credits held in reserve by the Mitigation Bank

Elements of the 5 Year Review

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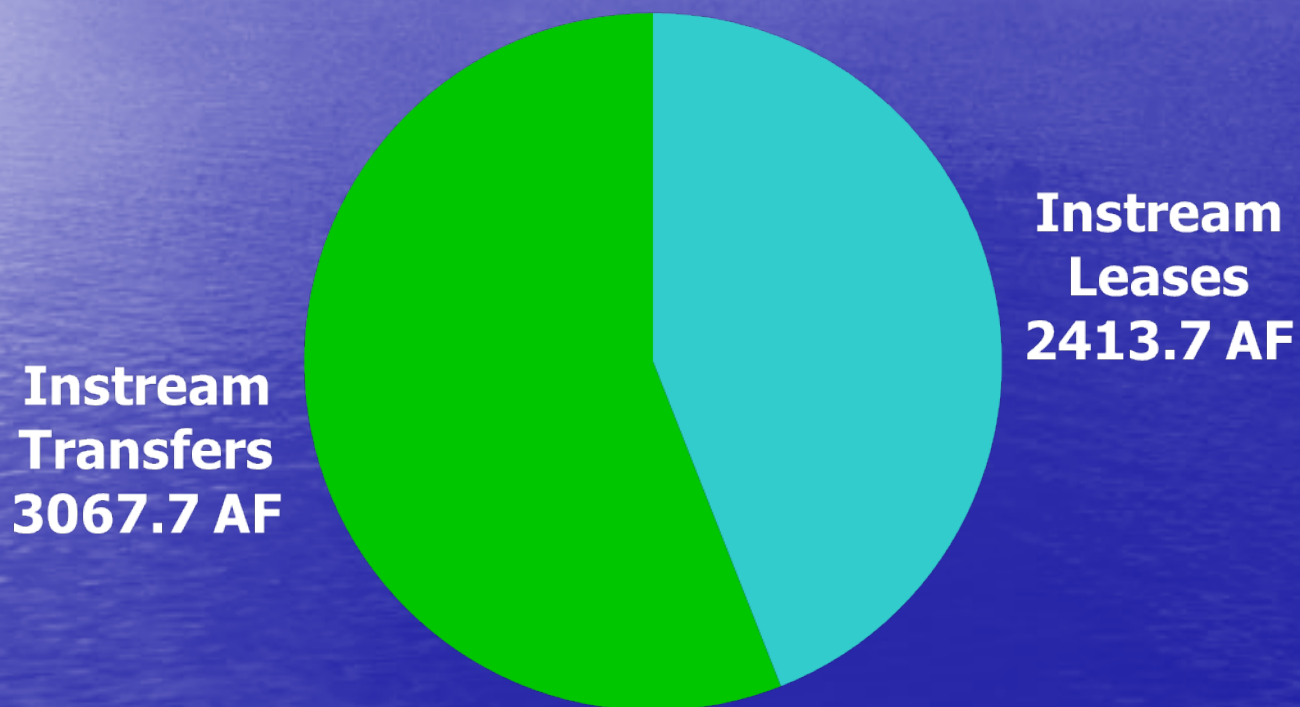


Mitigation Project Types

- Instream Lease
- Permanent Instream Transfer
- Time-Limited Instream Transfer
- Allocation of Conserved Water
- Aquifer Recharge
- Release of Stored Water



Mitigation Project Distribution



Remaining Project Types

- Time-Limited Instream Transfers
- Aquifer Recharge
- Allocation of Conserved Water
- Release of Stored Water



Elements of the 5 Year Review

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Instream Requirements

- Assessing the Impact of Mitigation on Streamflow in the Deschutes Basin
- Results at sites based on Deschutes Mitigation Model

Baseline = 1966 to 1995

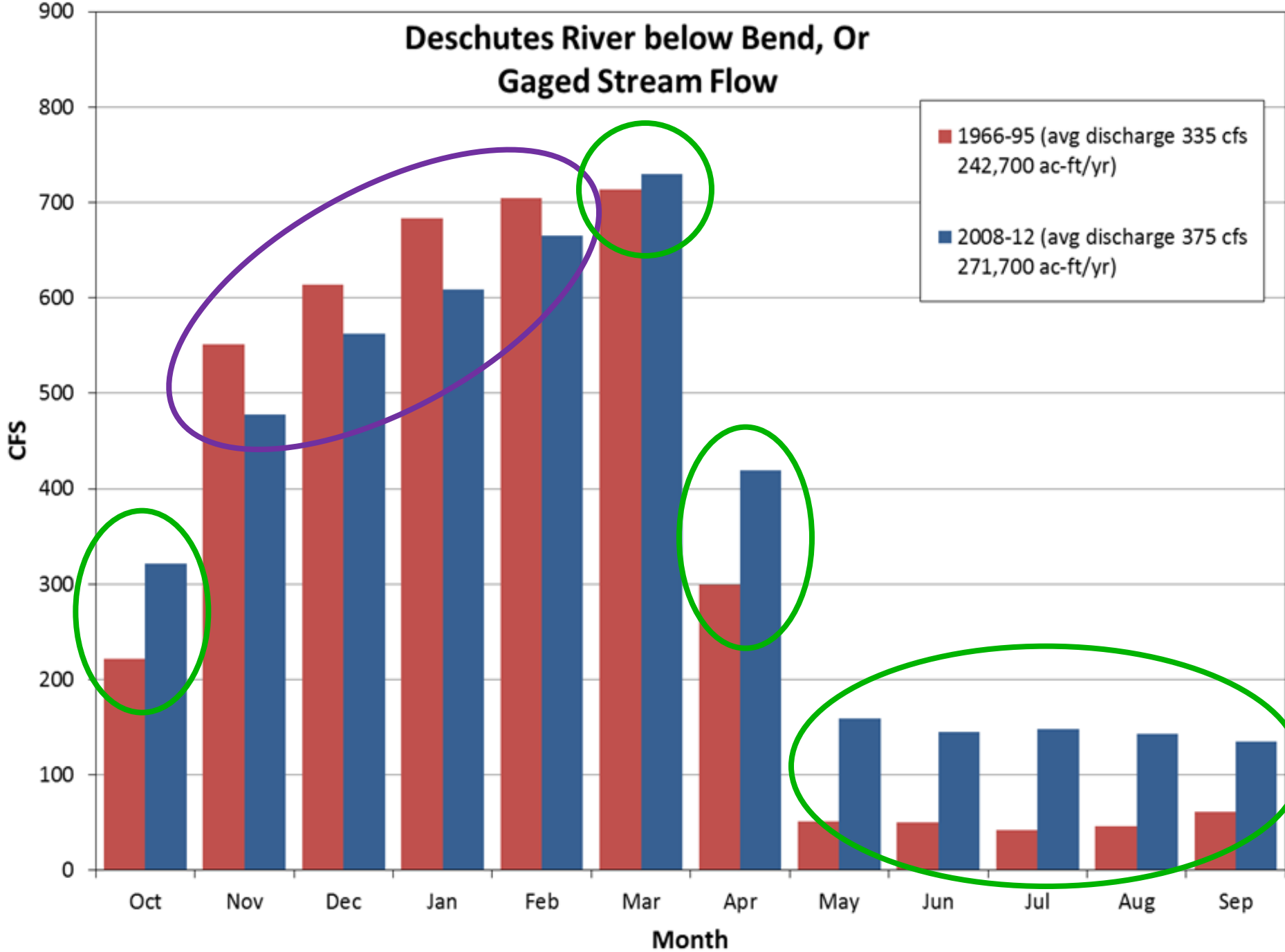


Instream Impacts – Model Results

- All changes are small.
- Positive changes are larger than negative changes.
- Overall positive impact on flows.
- Instream requirements met as often or more frequently.



Deschutes River below Bend, Or Gaged Stream Flow



Report Summary

- 10 years of implementation
- Evaluation demonstrates program working:
 - 95 new permits issued
 - Sufficient mitigation available
 - Model indicates instream requirements met more frequently as compared to baseline.
 - Gaged stream flow shows major benefits in summer



Alternatives

1. Accept the annual report and the five year report and direct staff to initiate rulemaking to modify Division 522 to clarify how the Department adds water back to the amount available under the allocation cap and reestablishes mitigation credits upon cancellation of a permit.
2. Direct staff to report back after further review of the program.
3. Accept both the annual and five year reports.



Recommend Option 1

1. Accept the annual report and the five year report and direct staff to initiate rulemaking to modify Division 522 to clarify how the Department adds water back to the amount available under the allocation cap and reestablishes mitigation credits upon cancellation of a permit.
2. Direct staff to report back after further review of the program.
3. Accept both the annual and five year reports.

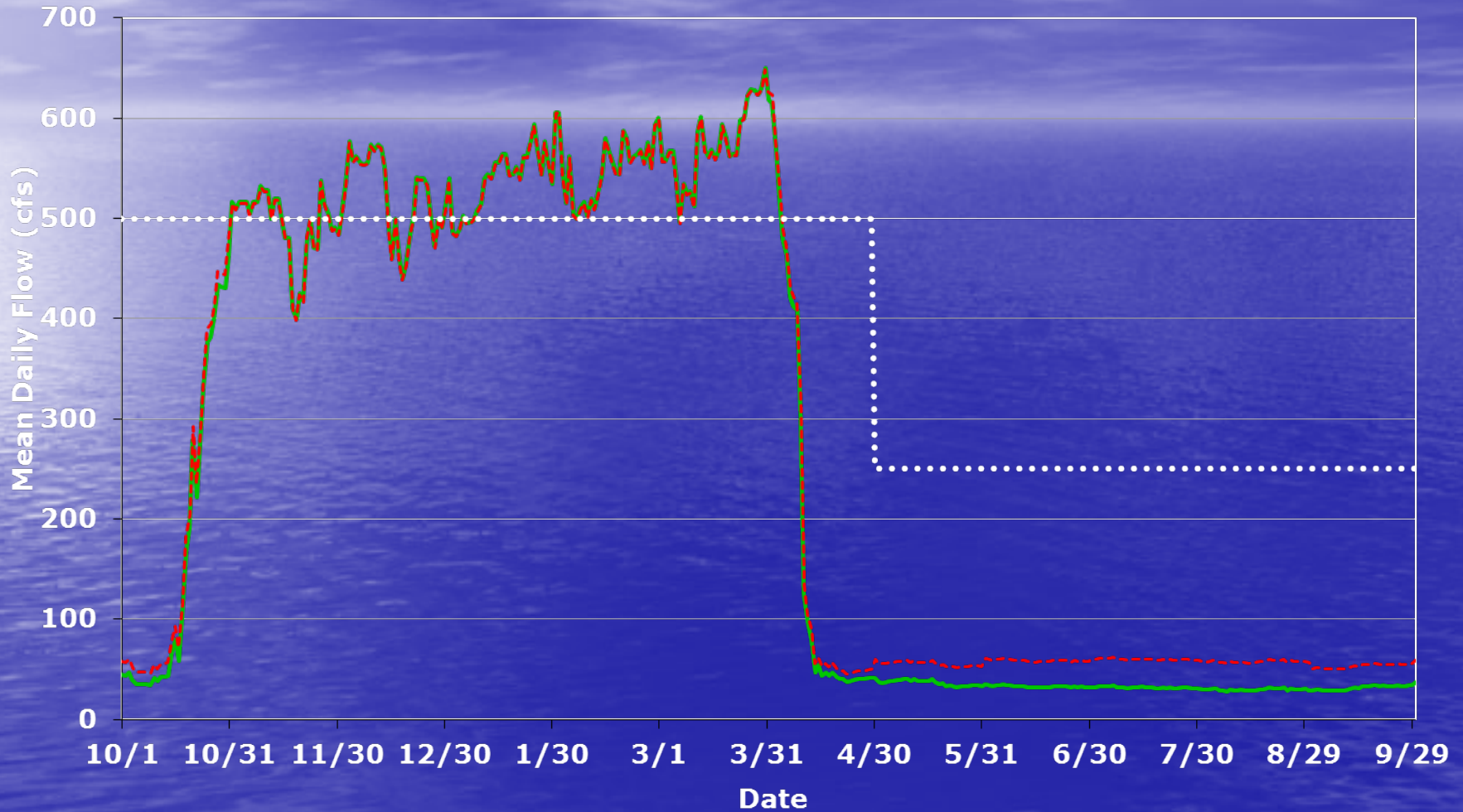


Thank You.

Questions?



Scenic Waterway Flows and baseline/mitigation streamflow conditions below Bend



— Historic Median - - - - historic median + mitigation related changes ····· SWF

Deschutes River Below Pelton Dam

Change In Mean Stream Flow As A Result Of Mitigated Groundwater Use

Month	Base Line Stream Flow*	Mitigated Stream Flow*	Change in Stream Flow	Percent Change
	cfs	cfs	cfs	%
January	5240	5220	-19.1	-0.37
February	5190	5170	-19.1	-0.37
March	5520	5500	-19.1	-0.35
April	5130	5130	-7.36	-0.14
May	4420	4430	8.57	0.17
June	4230	4240	17.2	0.41
July	4020	4040	20.1	0.50
August	3940	3950	17.3	0.44
September	3980	3990	11.1	0.28
October	4190	4190	0.1	0.00
November	4680	4660	-18.8	-0.40
December	5030	5010	-19.1	-0.38
Annual	4630	4630	-2.35	-0.05

*Stream flows have been rounded to three significant figures.



Deschutes River below Pelton Dam

Change In Percent Of Time Instream Requirements Are Met As A Result Of Mitigated Groundwater Use

Month	Base Line Percentage	Mitigated Percentage	Change in Percentage	Percent Change
	%	%	%	%
January	64.7	64.1	-0.64	-1.01
February	63.0	62.2	-0.83	-1.33
March	67.8	66.9	-0.97	-1.45
April	71.4	7.07	-0.78	-1.10
May	58.8	60.0	1.18	1.97
June	55.6	59.1	3.56	6.02
July	41.0	42.7	1.72	4.03
August	98.2	99.0	0.86	0.87
September	66.8	67.4	0.67	0.99
October	81.1	81.1	0.00	0.00
November	97.2	97.2	0.00	0.00
December	66.1	65.5	-0.64	-0.99
Annual	69.3	69.7	0.35	0.50



R.M. Cooper, Assessing the Impact of Mitigation on Stream flow in the Deschutes Basin.
Draft not yet available.

Deschutes River at Moody nr Biggs, Or Gaged Stream Flow

