AGENDA

IDAHO WATER RESOURCE BOARD

Work Session on the Mountain Home Airforce Base Sustainable Water Project
September 14, 2017
9:00 a.m.

Hampton Inn
Cottonwood A Meeting Room
3175 Foothills Ave.
MOUNTAIN HOME, ID

1. Roll Call
2. Background on Mountain Home Aquifer
3. Establishment of Water District 161 & Measurement Order
4. Water Users from the Aquifer & Economic Importance
5. History of MHAFB Sustainable Water Project
6. Status of MHAFB Sustainable Water Project
7. Comments from U.S. Air Force
8. Comments from Elected Officials/Other Dignitaries

** The Board will break for lunch at approximately 11:45 a.m.*

1:00 p.m. – 3:00 p.m.: The Board will depart for a Field Trip to the MHAFB Sustainable Water Project

Transportation will be provided for Board members, IDWR staff, and invited guests due to limited seating.

Americans with Disabilities

The meeting will be held in facilities that meet the accessibility requirements of the Americans with Disabilities Act. If you require special accommodations to attend, participate in, or understand the meeting, please make advance arrangements by contacting Department staff by email nikki.regent@idwr.idaho.gov or by phone at (208) 287-4800.

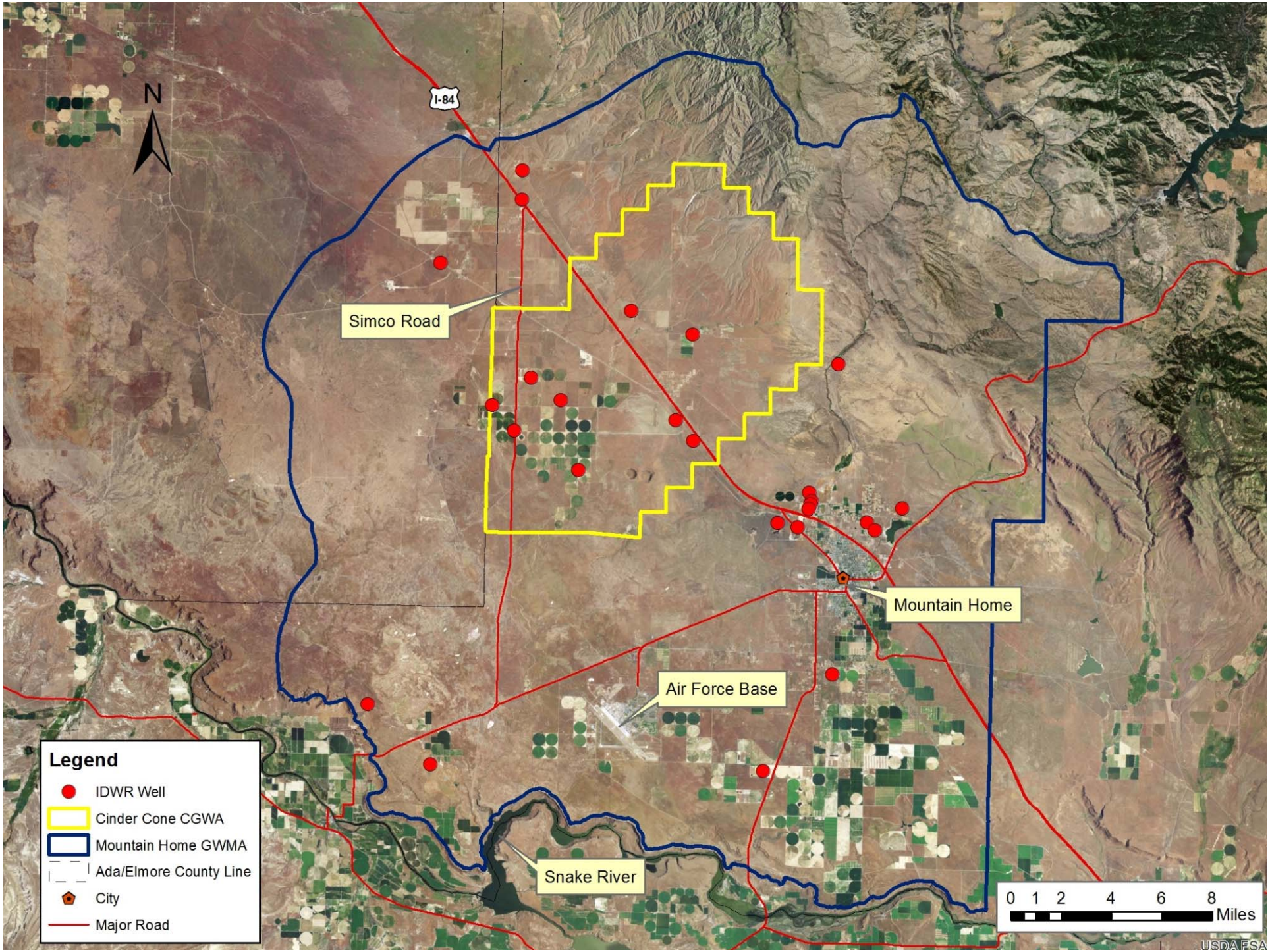
Hydrogeology of the Mountain Home Plateau

Presented by Craig Tesch, P.G.

September 14, 2017

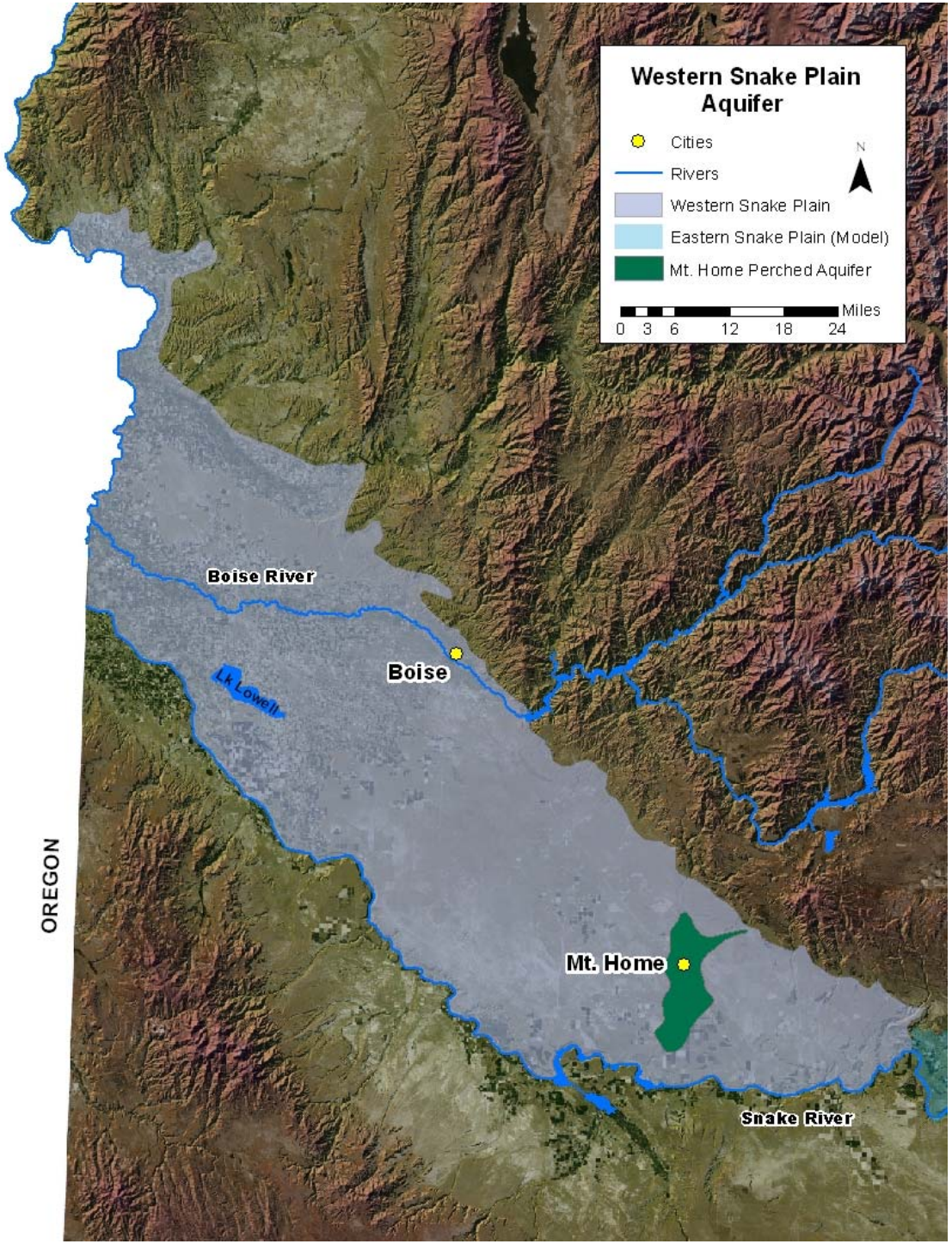
Overview

- Hydrogeology
- Administrative Management Areas
- IDWR Groundwater Monitoring Network
- Groundwater Level Declines
- Water Budget


N
I-84
Simco Road
Mountain Home
Air Force Base
Snake River
Legend
IDWR Well
Cinder Cone CGWA
Mountain Home GWMA
Ada/Elmore County Line
City
Major Road
0 1 2 4 6 8
Miles
USDA FSA

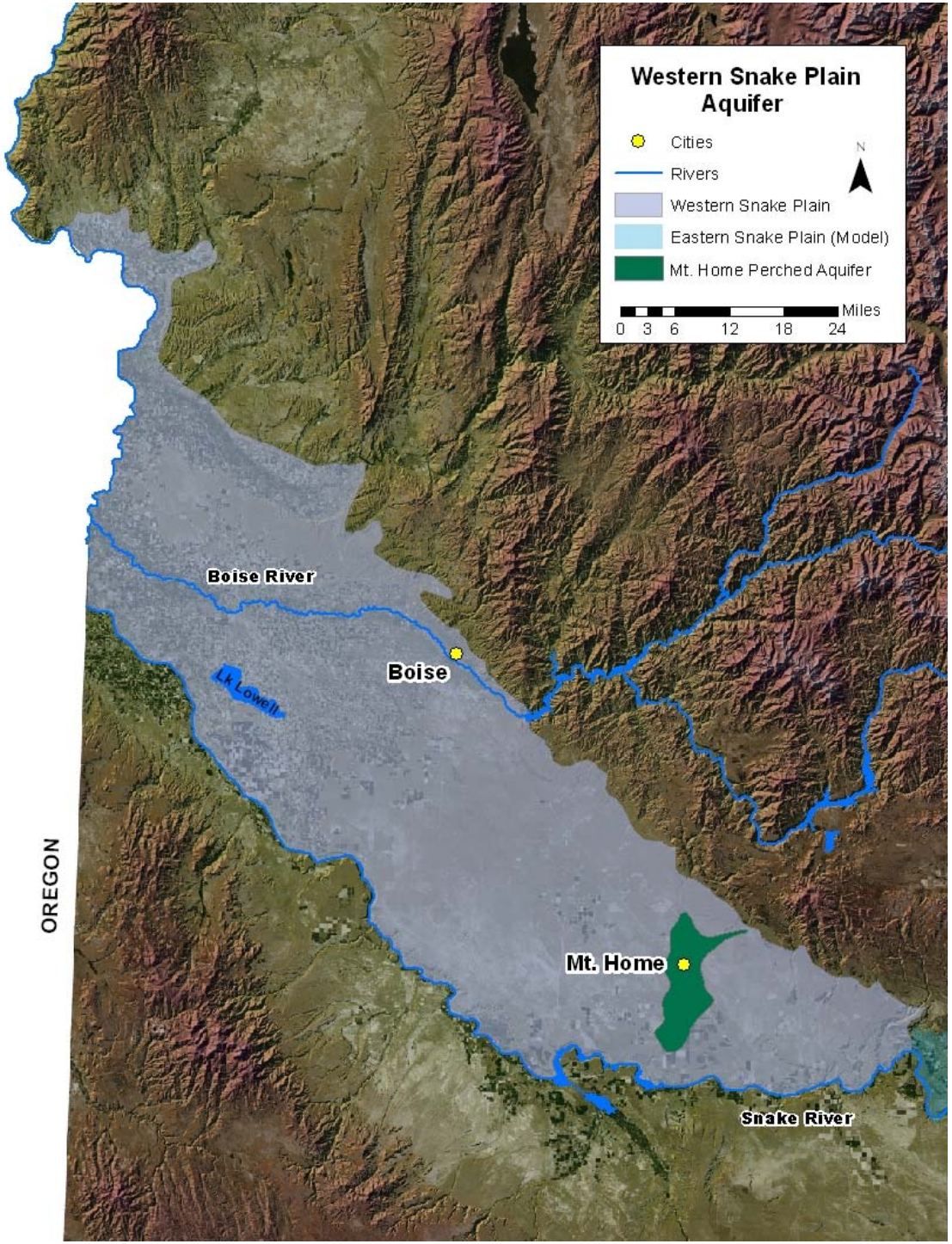
Regional Aquifer

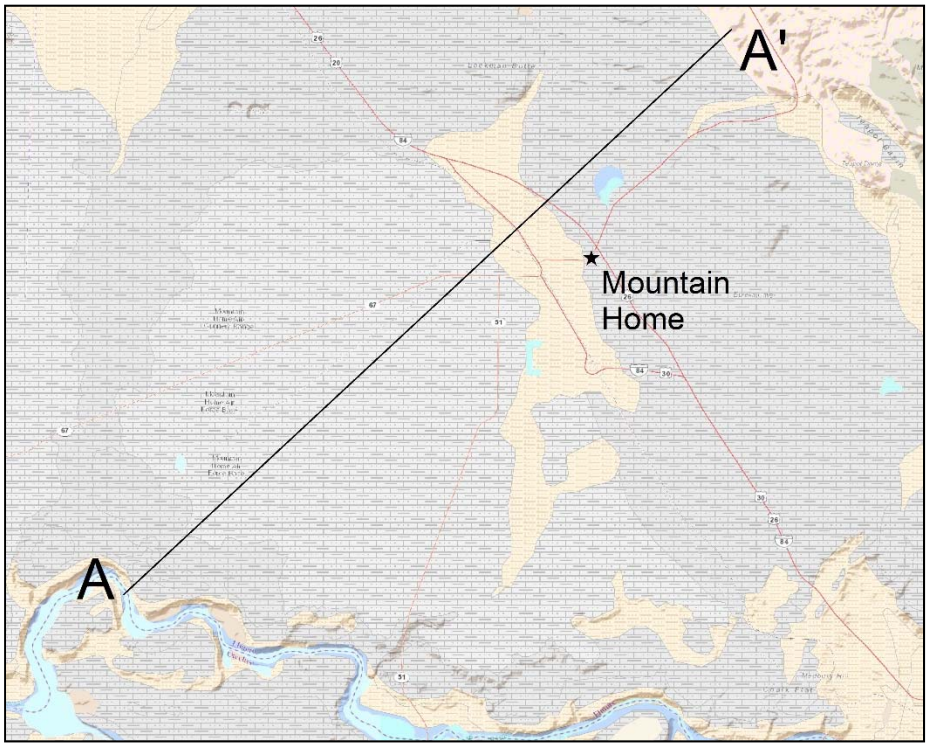
- Part of the larger Western Snake Plain Aquifer
- Primarily in basalts and sediments of the Bruneau Formation
- Depth to water >300 ft
- Recharge
  - Precipitation (9-11 in.)
  - perched aquifer leakage
  - stream infiltration
- Discharge primarily through
  - irrigation consumptive use
  - springs & underflow
- Used for municipal and large scale irrigation



Perched Aquifer

- Shallow, perched system, composed of sediments
- Flanks of the foothills and around the city of Mountain Home
- Depth to water 10 to 200 ft
- Used for domestic and small irrigation purposes
- Extent of connection to the regional system is relatively unknown





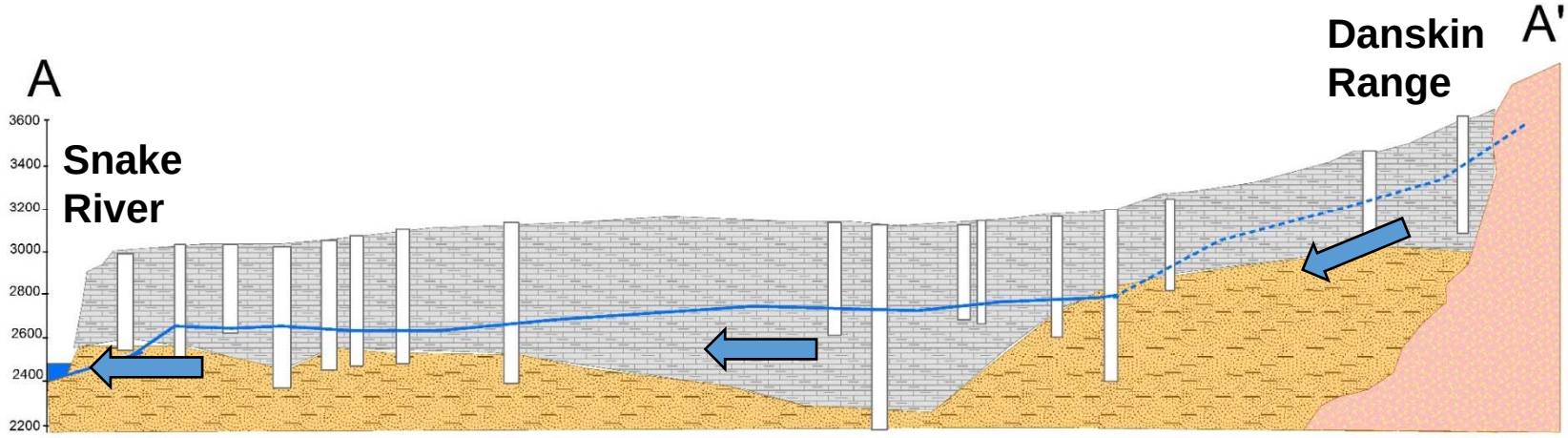
Bruneau Formation
Basalt and Sediments

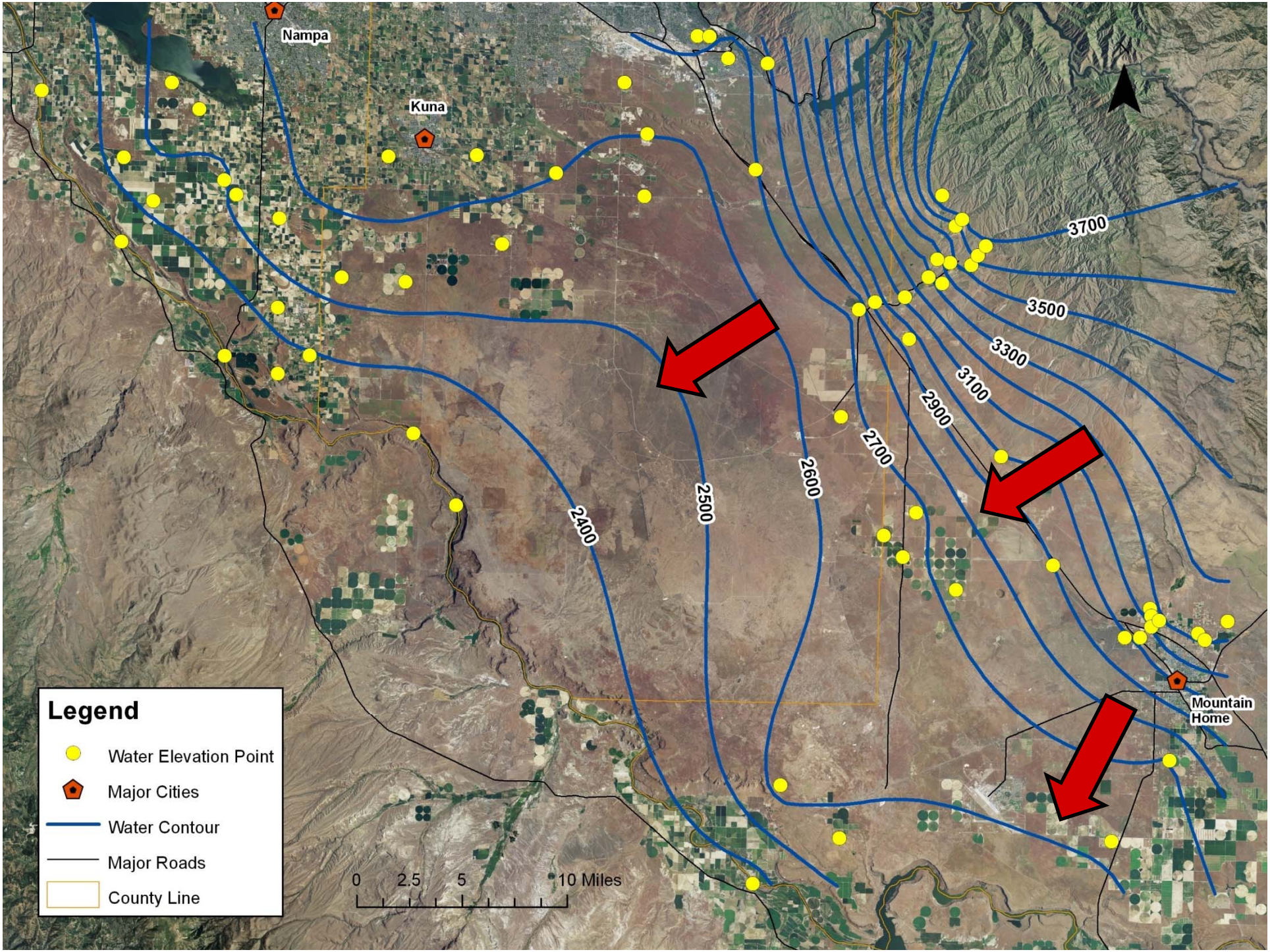
Glens Ferry Formation
Sediments

Idaho Batholith

Groundwater Flow

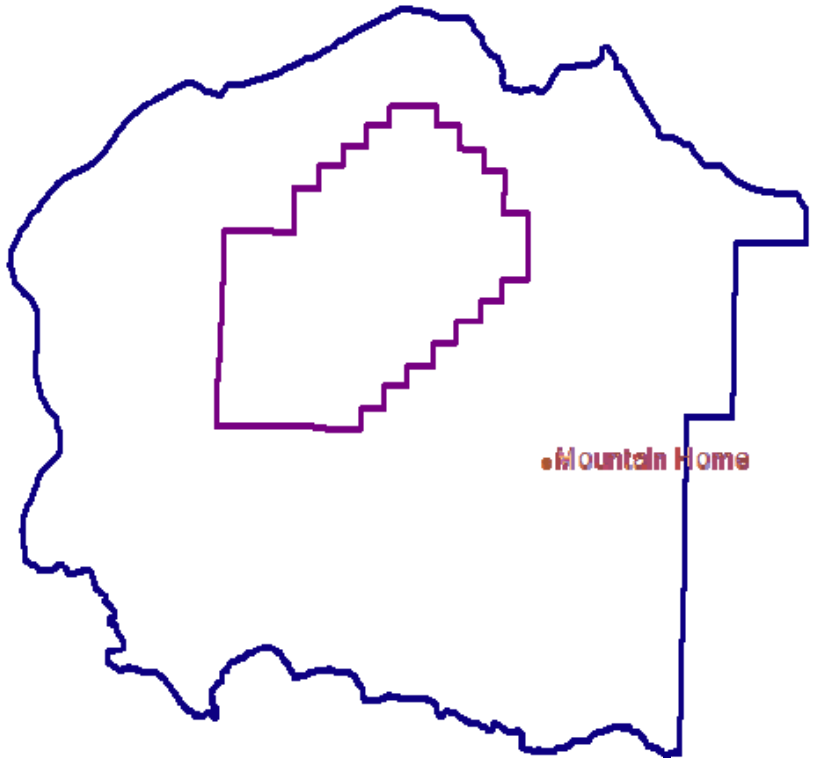
General Water Table




Nampa
Kuna
Mountain Home
3700
3500
3300
3100
2900
2700
2600
2500
2400
Legend
Water Elevation Point
Major Cities
Water Contour
Major Roads
County Line
0
2.5
5
10 Miles

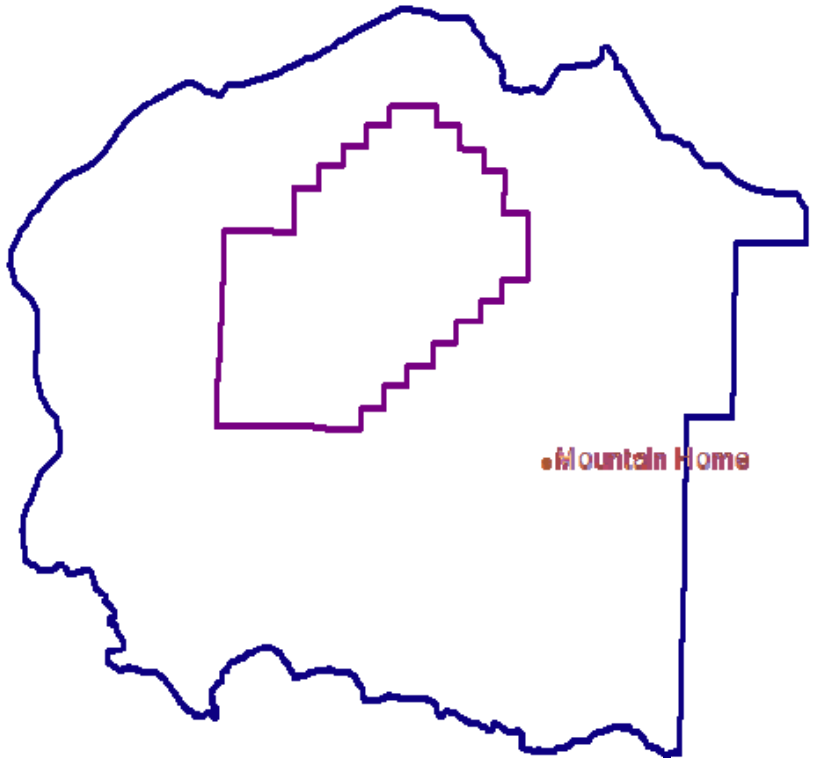
Administrative Management Areas

- Cinder Cone Butte Critical Ground Water Area (CGWA)
  - Established May 7, 1981
  - Area does not have sufficient ground water to provide a safe supply for current or projected uses
  - No new appropriations
- Mountain Home Ground Water Management Area (GWMA)
  - Established November 9, 1982
  - Area approaching a CGWA
  - New appropriations may be allowed if shown not to injure existing rights

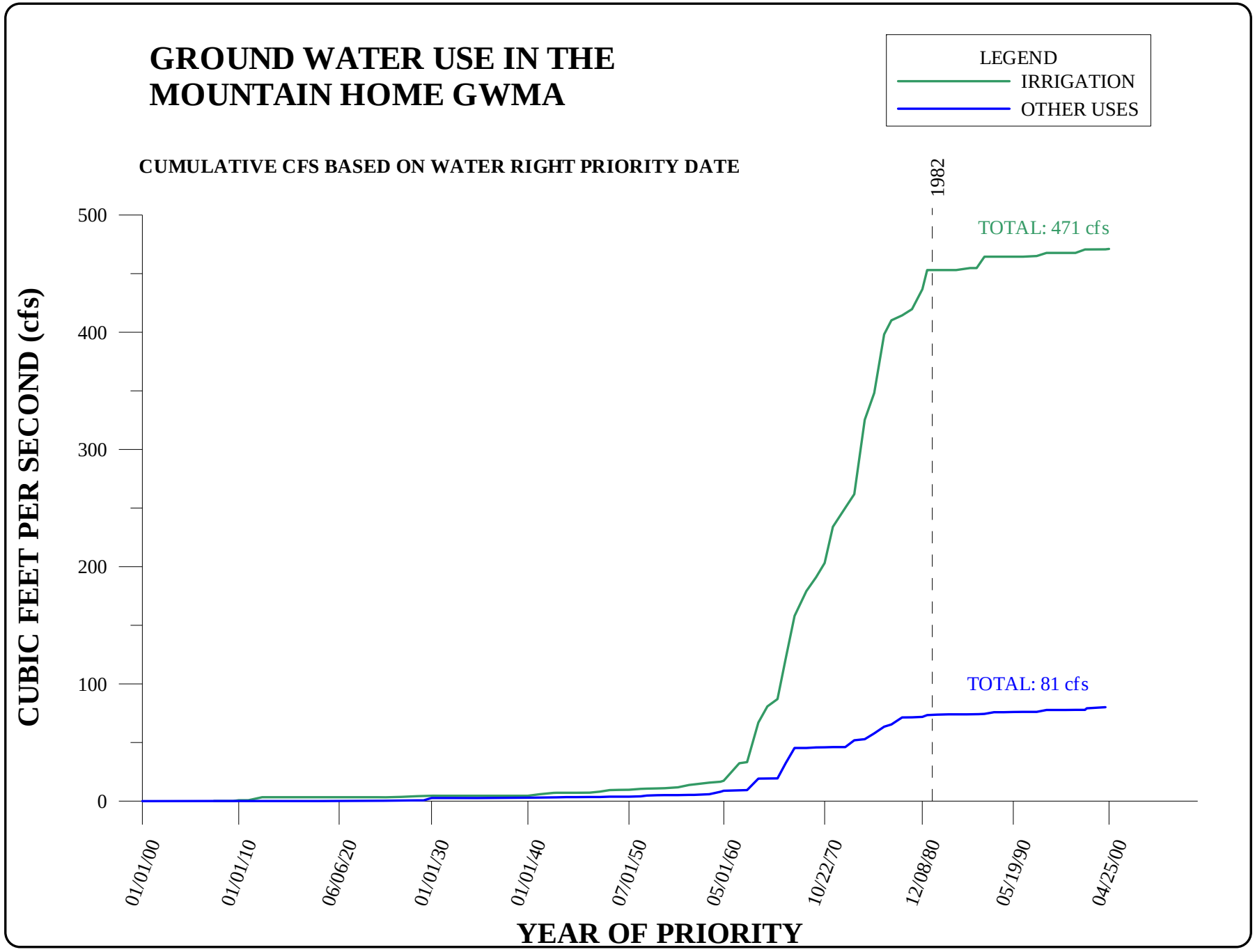


Administrative Management Areas

- Reasons for Designation
  - Rapid agricultural development
  - Water level declines
  - Pending applications for additional development

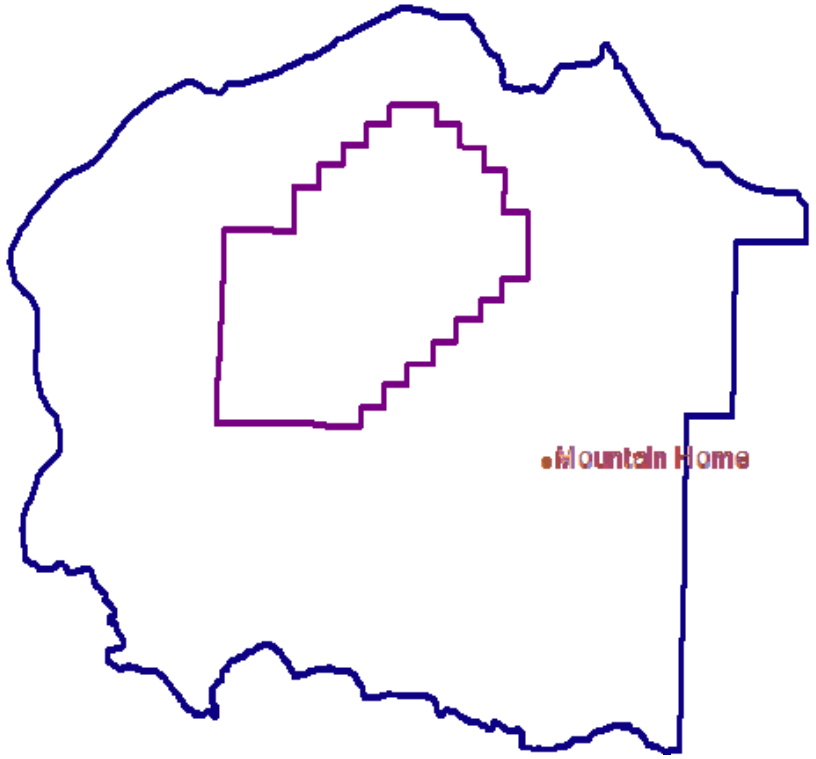


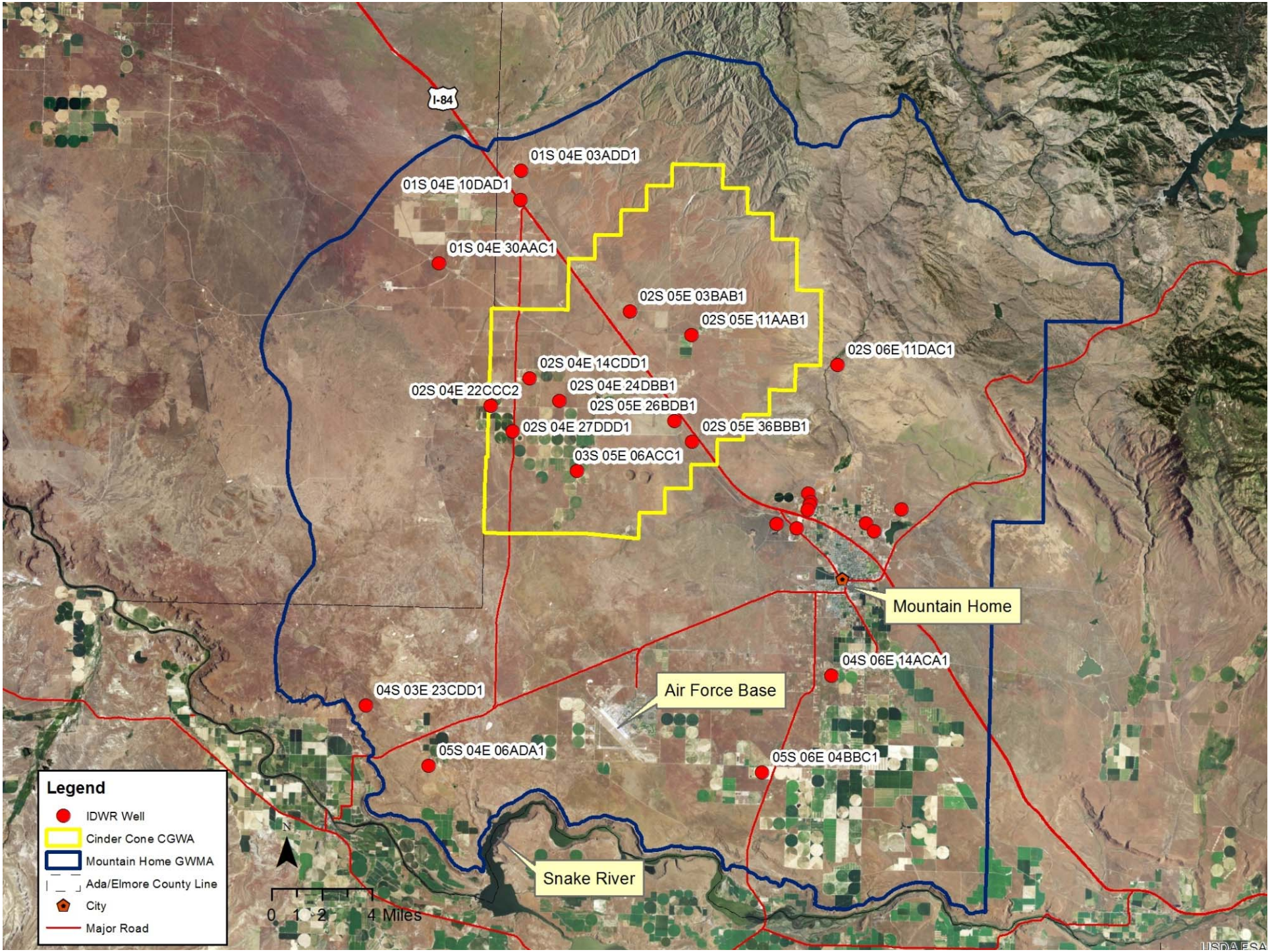
GROUND WATER USE IN THE MOUNTAIN HOME GWMA

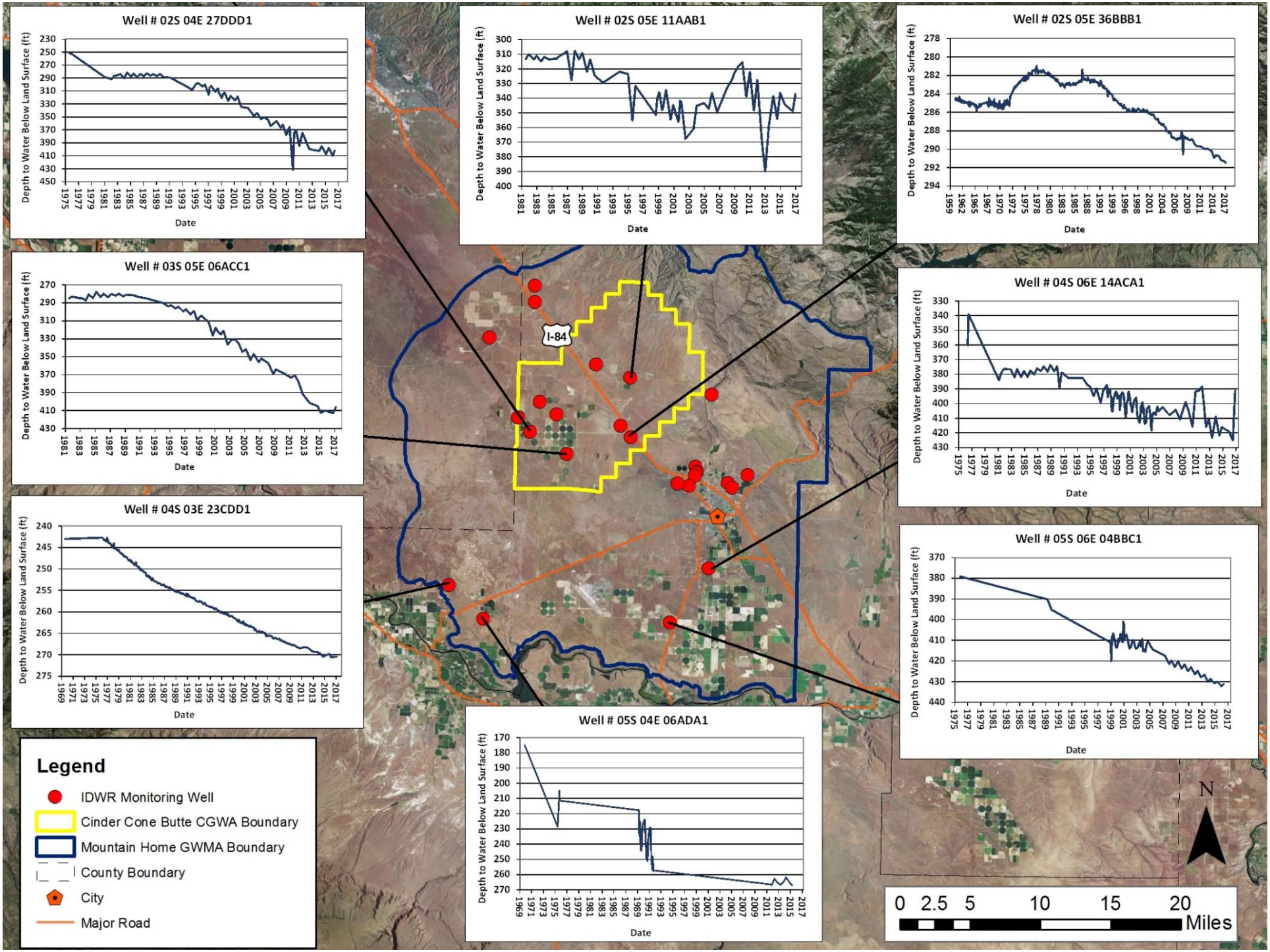


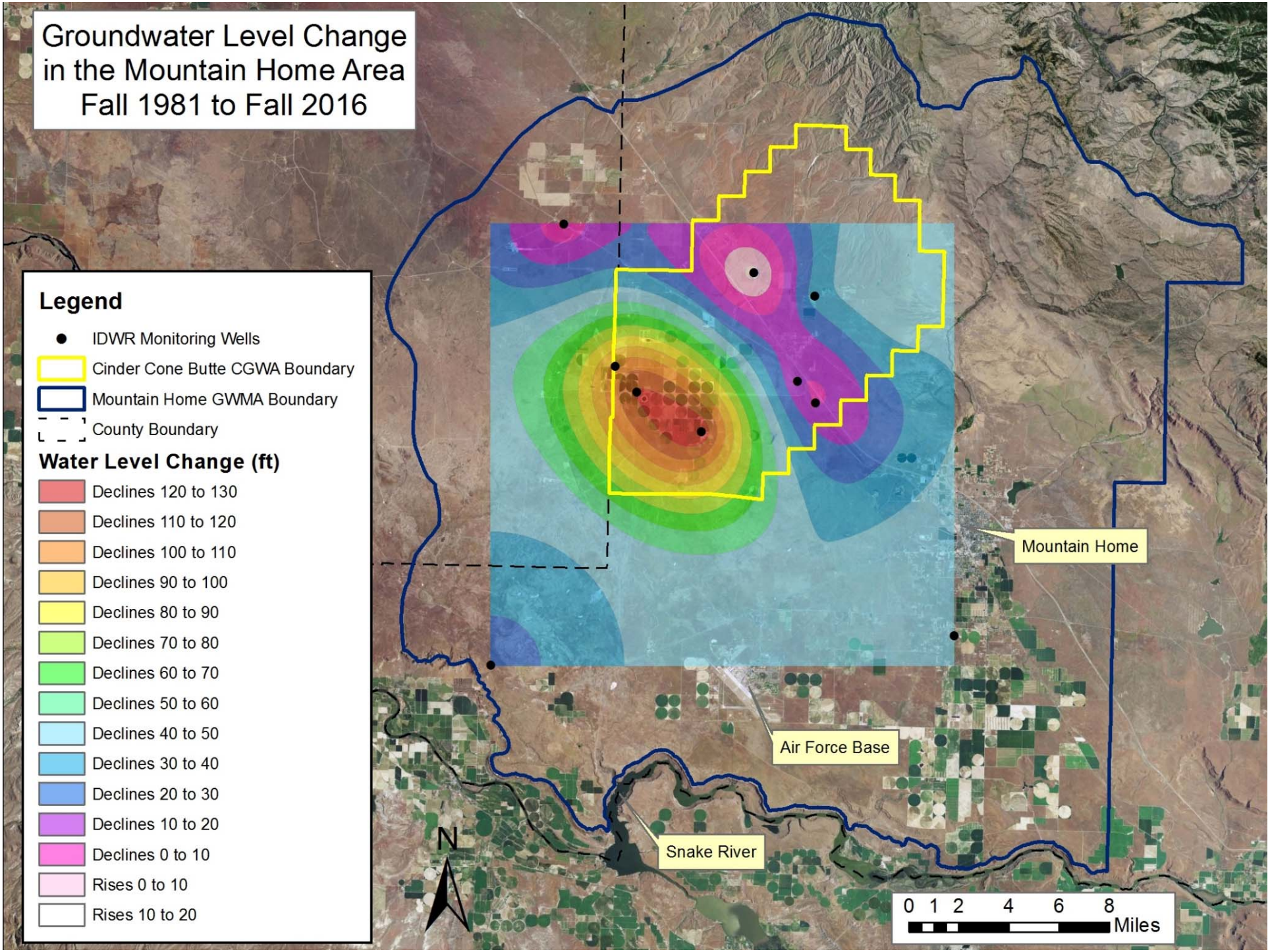
IDWR Groundwater Monitoring Network

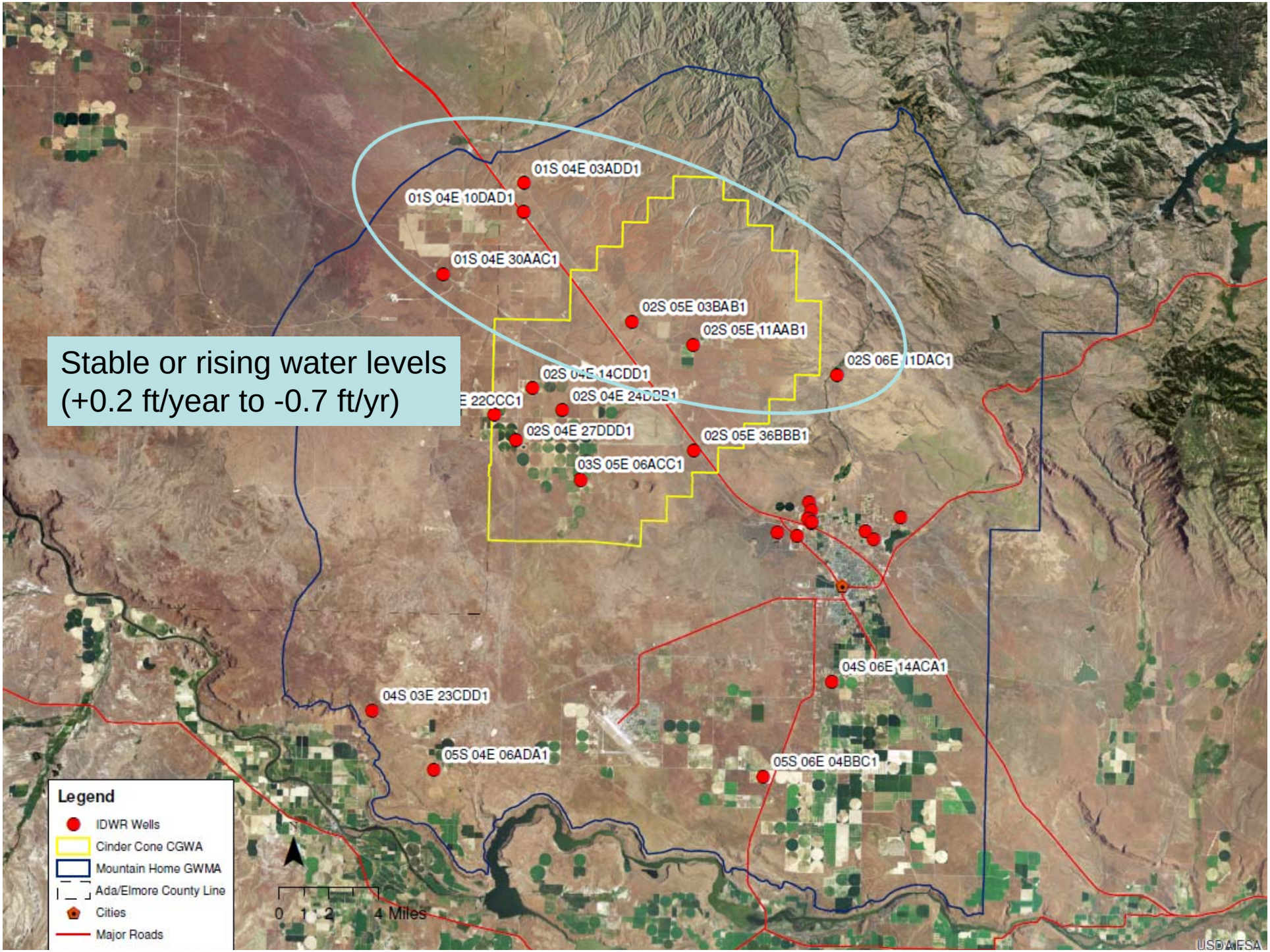
- 26 wells measured semi-annually
- Primarily irrigation wells in the regional system (250-450 ft)
- Some domestic wells in the perched system (< 100 ft)
- Transducers in two wells near Canyon Creek

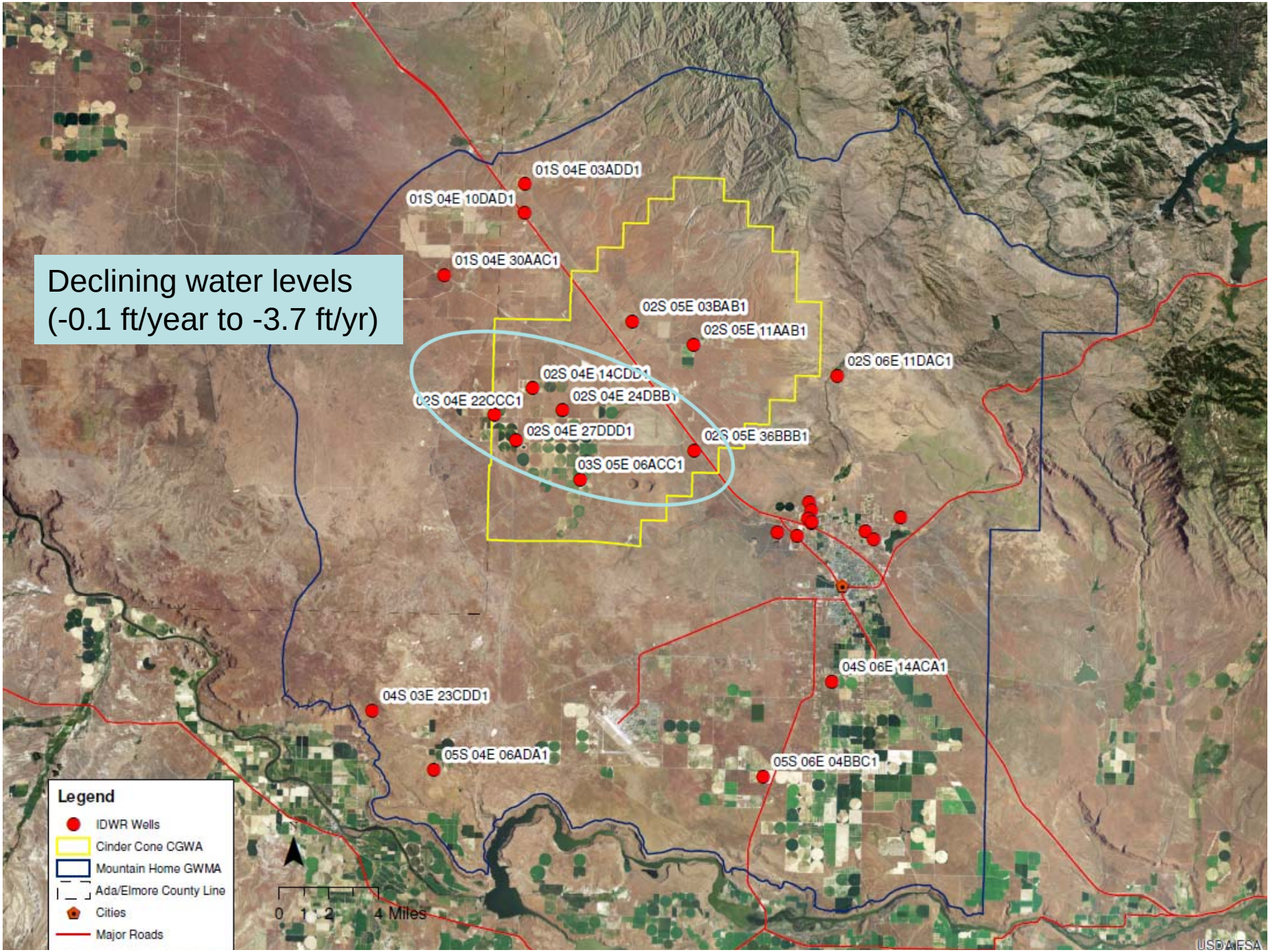



I-84
01S 04E 03ADD1
01S 04E 10DAD1
01S 04E 30AAC1
02S 05E 03BAB1
02S 05E 11AAB1
02S 06E 11DAC1
02S 04E 14CDD1
02S 04E 22CCC2
02S 04E 24DBB1
02S 05E 26BDB1
02S 04E 27DDD1
02S 05E 36BBB1
03S 05E 06ACC1
Mountain Home
04S 06E 14ACA1
Air Force Base
04S 03E 23CDD1
05S 04E 06ADA1
05S 06E 04BBC1
Snake River
Legend
IDWR Well
Cinder Cone CGWA
Mountain Home GWMA
Ada/Elmore County Line
City
Major Road
N
0 1 2 4 Miles
USDA FSA


Well # 02S 04E 27DDD1
Depth to Water Below Land Surface (ft)
Date
Well # 02S 05E 11AAB1
Depth to Water Below Land Surface (ft)
Date
Well # 02S 05E 36BBB1
Depth to Water Below Land Surface (ft)
Date
Well # 03S 05E 06ACC1
Depth to Water Below Land Surface (ft)
Date
I-84
Well # 04S 06E 14ACA1
Depth to Water Below Land Surface (ft)
Date
Well # 04S 03E 23CDD1
Depth to Water Below Land Surface (ft)
Date
Well # 05S 06E 04BBC1
Depth to Water Below Land Surface (ft)
Date
Well # 05S 04E 06ADA1
Depth to Water Below Land Surface (ft)
Date
Legend
IDWR Monitoring Well
Cinder Cone Butte CGWA Boundary
Mountain Home GWMA Boundary
County Boundary
City
Major Road
N
0 2.5 5 10 15 20
Miles


Groundwater Level Change in the Mountain Home Area Fall 1981 to Fall 2016
Legend
IDWR Monitoring Wells
Cinder Cone Butte CGWA Boundary
Mountain Home GWMA Boundary
County Boundary
Water Level Change (ft)
Declines 120 to 130
Declines 110 to 120
Declines 100 to 110
Declines 90 to 100
Declines 80 to 90
Declines 70 to 80
Declines 60 to 70
Declines 50 to 60
Declines 40 to 50
Declines 30 to 40
Declines 20 to 30
Declines 10 to 20
Declines 0 to 10
Rises 0 to 10
Rises 10 to 20
Mountain Home
Air Force Base
Snake River
N
0 1 2 4 6 8
Miles


Stable or rising water levels
(+0.2 ft/year to -0.7 ft/yr)
01S 04E 03ADD1
01S 04E 10DAD1
01S 04E 30AAC1
02S 05E 03BAB1
02S 05E 11AAB1
02S 06E 11DAC1
02S 04E 14CDD1
02S 04E 24DDB1
02S 04E 27DDD1
02S 05E 36BBB1
03S 05E 06ACC1
04S 06E 14ACA1
04S 03E 23CDD1
05S 04E 06ADA1
05S 06E 04BBC1
Legend
IDWR Wells
Cinder Cone CGWA
Mountain Home GWMA
Ada/Elmore County Line
Cities
Major Roads
0 1 2 4 Miles
USDA FSA


Declining water levels
(-0.1 ft/year to -3.7 ft/yr)
01S 04E 03ADD1
01S 04E 10DAD1
01S 04E 30AAC1
02S 05E 03BAB1
02S 05E 11AAB1
02S 06E 11DAC1
02S 04E 14CDD1
02S 04E 22CCC1
02S 04E 24DBB1
02S 04E 27DDD1
02S 05E 36BBB1
03S 05E 06ACC1
04S 06E 14ACA1
04S 03E 23CDD1
05S 04E 06ADA1
05S 06E 04BBC1
Legend
IDWR Wells
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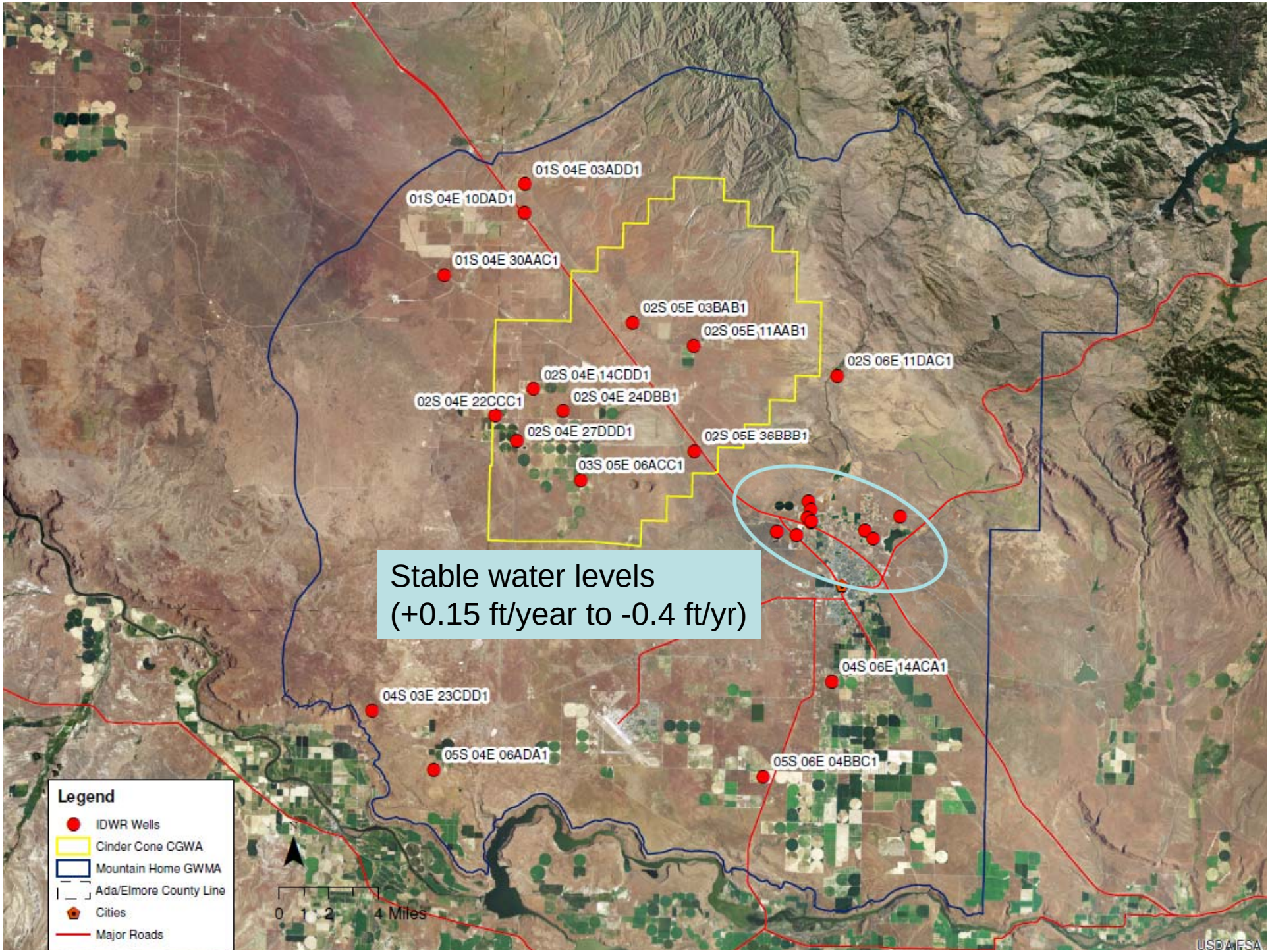
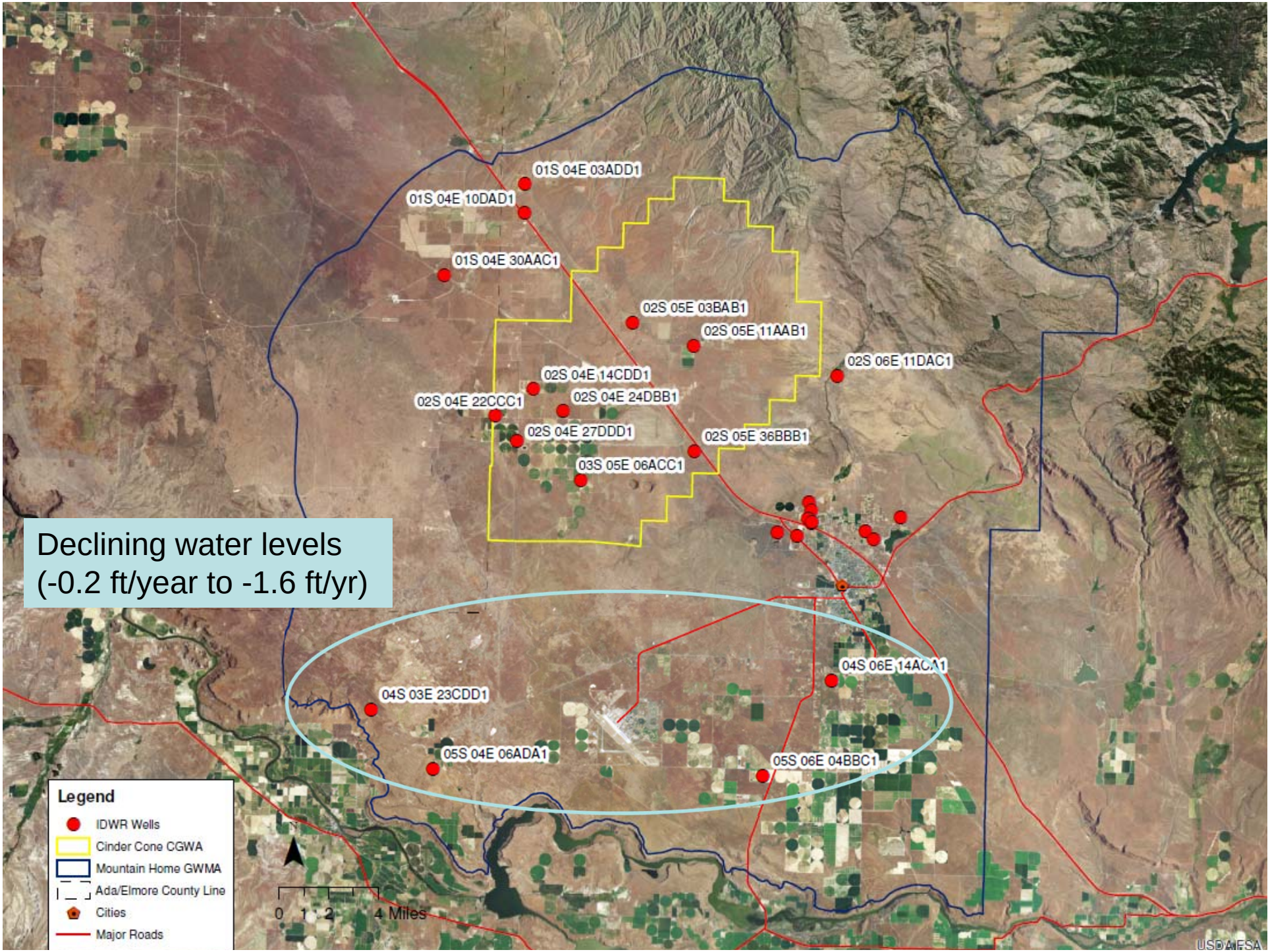
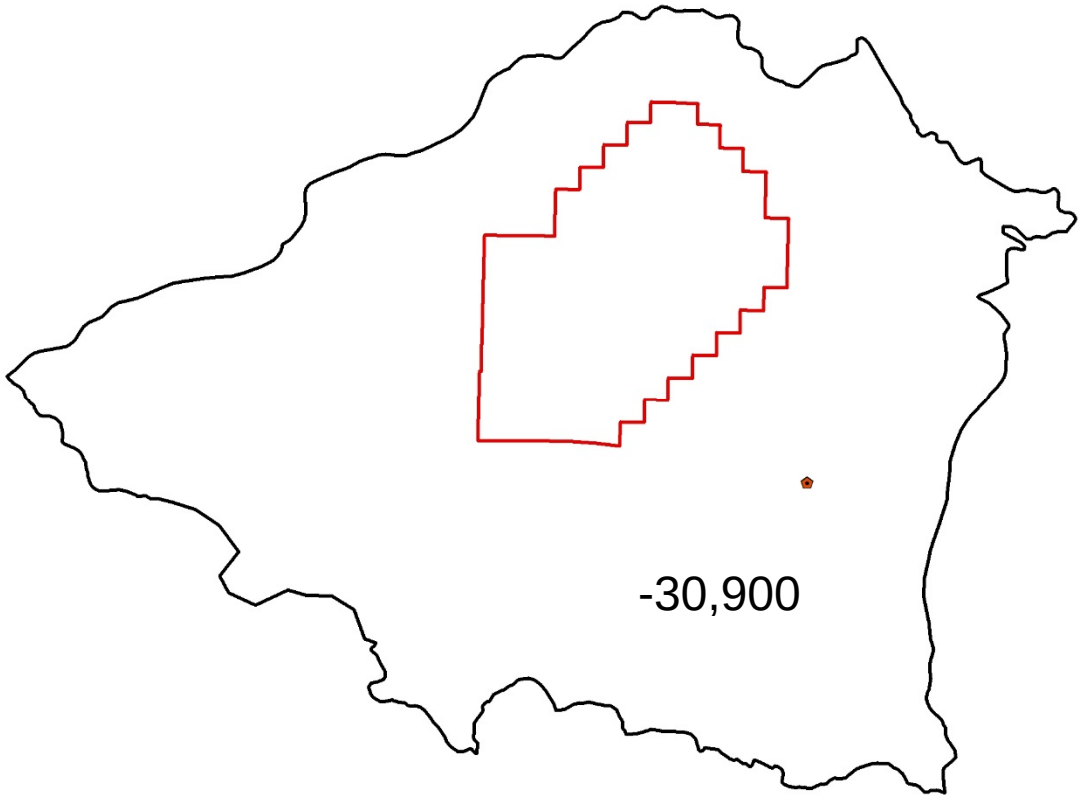
Ada/Elmore County Line
Cities
Major Roads
0 1 2 4 Miles
USDA FSA


01S 04E 03ADD1
01S 04E 10DAD1
01S 04E 30AAC1
02S 05E 03BAB1
02S 05E 11AAB1
02S 06E 11DAC1
02S 04E 14CDD1
02S 04E 22CCC1
02S 04E 24DBB1
02S 04E 27DDD1
02S 05E 36BBB1
03S 05E 06ACC1
Stable water levels
(+0.15 ft/year to -0.4 ft/yr)
04S 06E 14ACA1
04S 03E 23CDD1
05S 04E 06ADA1
05S 06E 04BBC1
Legend
IDWR Wells
Cinder Cone CGWA
Mountain Home GWMA
Ada/Elmore County Line
Cities
Major Roads
0 1 2 4 Miles
USDA FSA


01S 04E 03ADD1
01S 04E 10DAD1
01S 04E 30AAC1
02S 05E 03BAB1
02S 05E 11AAB1
02S 06E 11DAC1
02S 04E 14CDD1
02S 04E 22CCC1
02S 04E 24DBB1
02S 04E 27DDD1
02S 05E 36BBB1
03S 05E 06ACC1
Declining water levels
(-0.2 ft/year to -1.6 ft/yr)
04S 06E 14ACA1
04S 03E 23CDD1
05S 04E 06ADA1
05S 06E 04BBC1
Legend
IDWR Wells
Cinder Cone CGWA
Mountain Home GWMA
Ada/Elmore County Line
Cities
Major Roads
0 1 2 4 Miles
USDA FSA

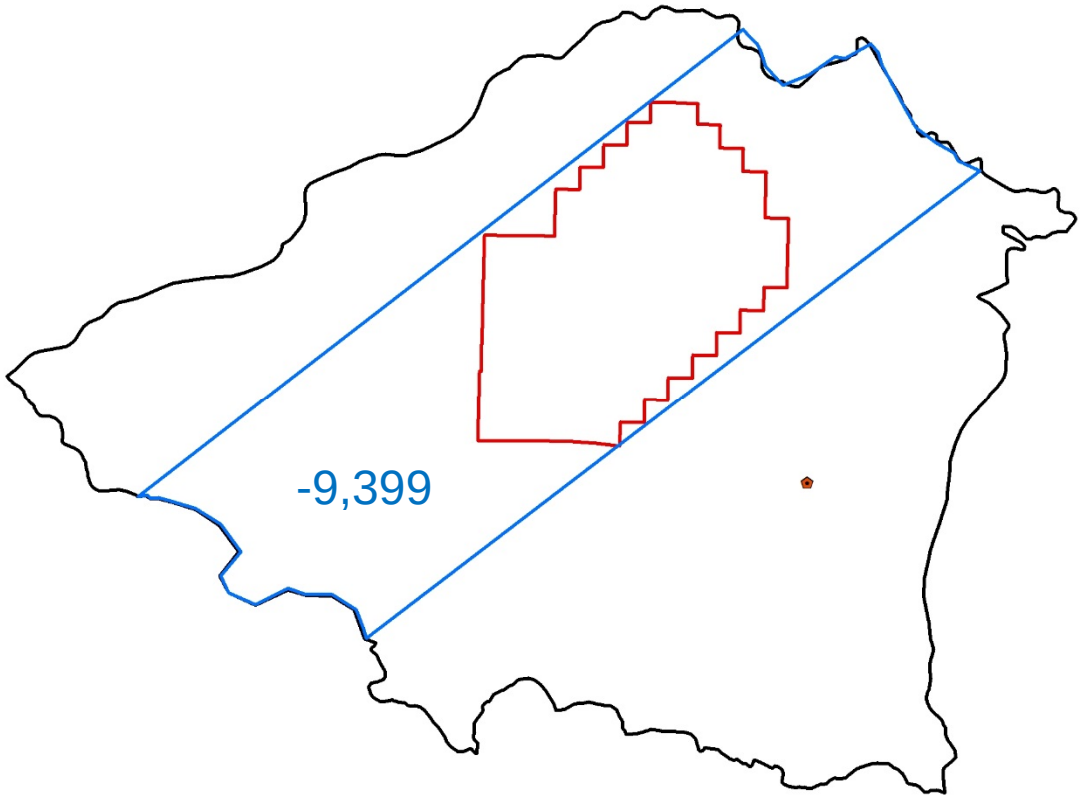
Water Budget

- Harrington (2004)
  - MH GWMA extended to the TVHP boundary
  - -30,900 AF/yr deficit



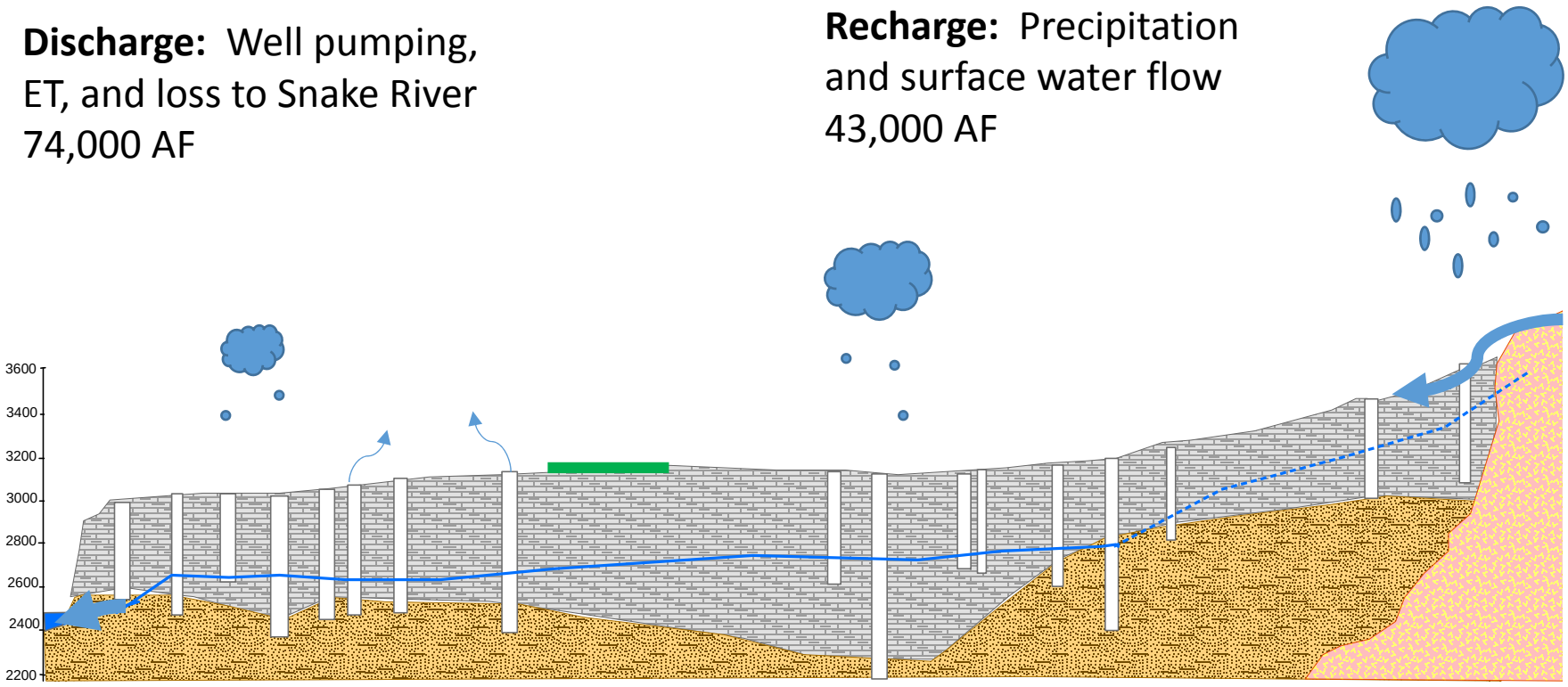
Water Budget

- Harrington (2004)
  - MH GWMA extended to the TVHP boundary
  - -30,900 AF/yr deficit
- Tesch (2012)
  - Cinder Cone CGWA
  - -9,399 AF/yr deficit



Discharge: Well pumping, ET, and loss to Snake River
74,000 AF

Recharge: Precipitation and surface water flow
43,000 AF



Overall Ground Water Budget
Inflow - Outflow = +/- Storage
43,000 - 74,000 = - 31,000 AF

Reference: Harrington, 2004

Summary

- Mountain Home Plateau contains both a GWMA and CGWA
- Groundwater level declines of ~120 feet over the last 35 years in the southwest area of the Cinder Cone CGWA (~3.5 ft/yr)
- Groundwater level declines of ~50 feet over the last 35 years near the Air Force base (~1.4 ft/yr)
- Water budget deficit in the regional system
- Mountain Home regional aquifer is recharge limited; consumptive use exceeds the rate of recharge

END

Water Budget
Ondrechen (2004)

Basin Inflow and Supply		Supply/Use (AFA)
Canyon Creek yield		20,900
Little Camas Creek (imported)		9,500
Rattlesnake Creek yield		3,800
Ditto Creek and adjacent areas		4,100
Precipitation on rocky areas		4,400
	Total	42,700
Consumptive Use and Loss		
Loss to Snake River		1,500
Use by irrigated crops		69,600
Use by Municipal and Air Base		2,500
	Total	73,600
Inflow Minus Use		-30,900

Water budgets for the consolidated hearing study area and the Cinder Cone comparison area

Item	Component	Consolidated Hearing Study Area	Cinder Cone Comparison Area
1	Acres within Recharge Area	45,490	52,492
2	Precipitation (AFA) within Recharge Area	75,420	88,989
3	Actual Evapotranspiration (AFA) within Recharge Area	66,147	76,240
4	Acres within Non-recharge Area	177,447	181,307
5	Precipitation within Non-recharge Area (AFA)	175,662	162,111
6	Recharge from Precipitation in Non-recharge Area (AFA)	2,656	2,025
7	Irrigated Lands CIR (AFA) * Non-recharge Area	884	13,131
8	Surface Discharge Out of Area (AFA) 8a) Blacks Creek 8b) Indian Creek Reservoir Evaporation 8c) Canyon Creek Total Surface Discharge Out of Area (AFA)	 506 360 866	 9,877 9,877
9	DCMI Consumptive Use Breakdown Recharge + Non-recharge Areas (AFA): 9a) GW Rights 9b) Springs 9c) Surface Water 9d) Permit Volume Total DCMI Consumptive Use (AFA)	 317 6 170 2,566 3,059	 797 136 99 132 1,165
10	**Recharge (AFA) [Item#2-#3+#6-#8]**	11,063	4,897
11	**Recharge (cfs)**	15.27	6.76
12	**Net Recharge (AFA) [Item#10-#7-#9]**	7,120	-9,399
13	**Net Recharge (cfs)**	9.83	-12.97

WD161 - Mountain Home Area Water District

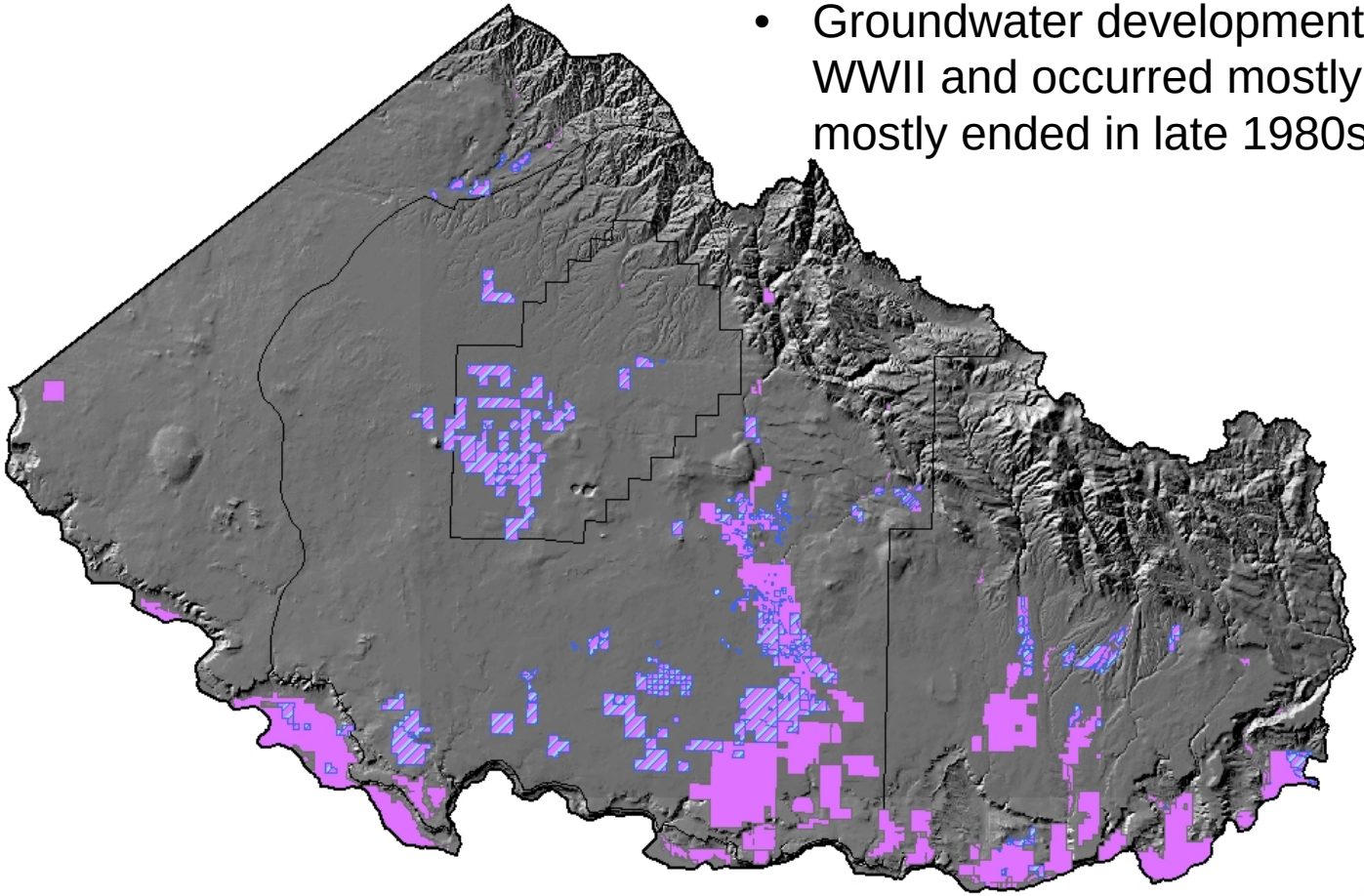
Presented by Tim Luke, IDWR

IWRB Work Session on the MHAFB Sustainable Water Project

Date September 14, 2017

Brief Irrigation Development history:

- About ½ of surface water rights developed by ~1915 – not much else until after WWII. Rest developed before end of 1980s.
- Groundwater development started mostly after WWII and occurred mostly in 60s and 70s, also mostly ended in late 1980s.

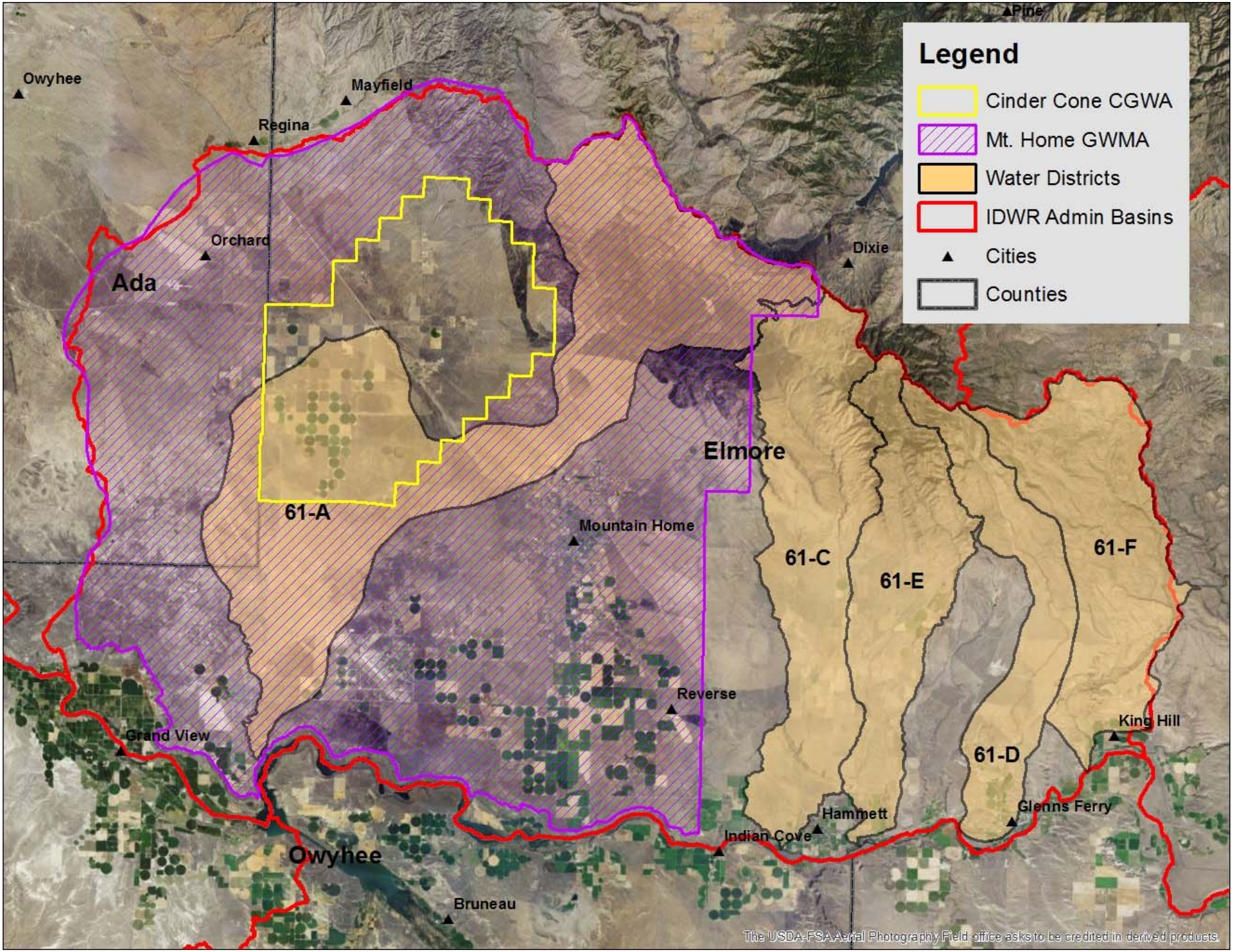


Actual Acreage irrigated less than the 98K-acre area shown.

Regulation History

- 1891 – 1943: Various water use disputes, litigation & adjudication of water rights in separate surface water drainages in Basin 61
    - Resulted in designation of five water districts over time
    - Four of five 5 districts currently active

- 2012: Water District 02 created, Snake River from Milner to Murphy
    - Includes some irrigated lands in Basin 61 along Snake River

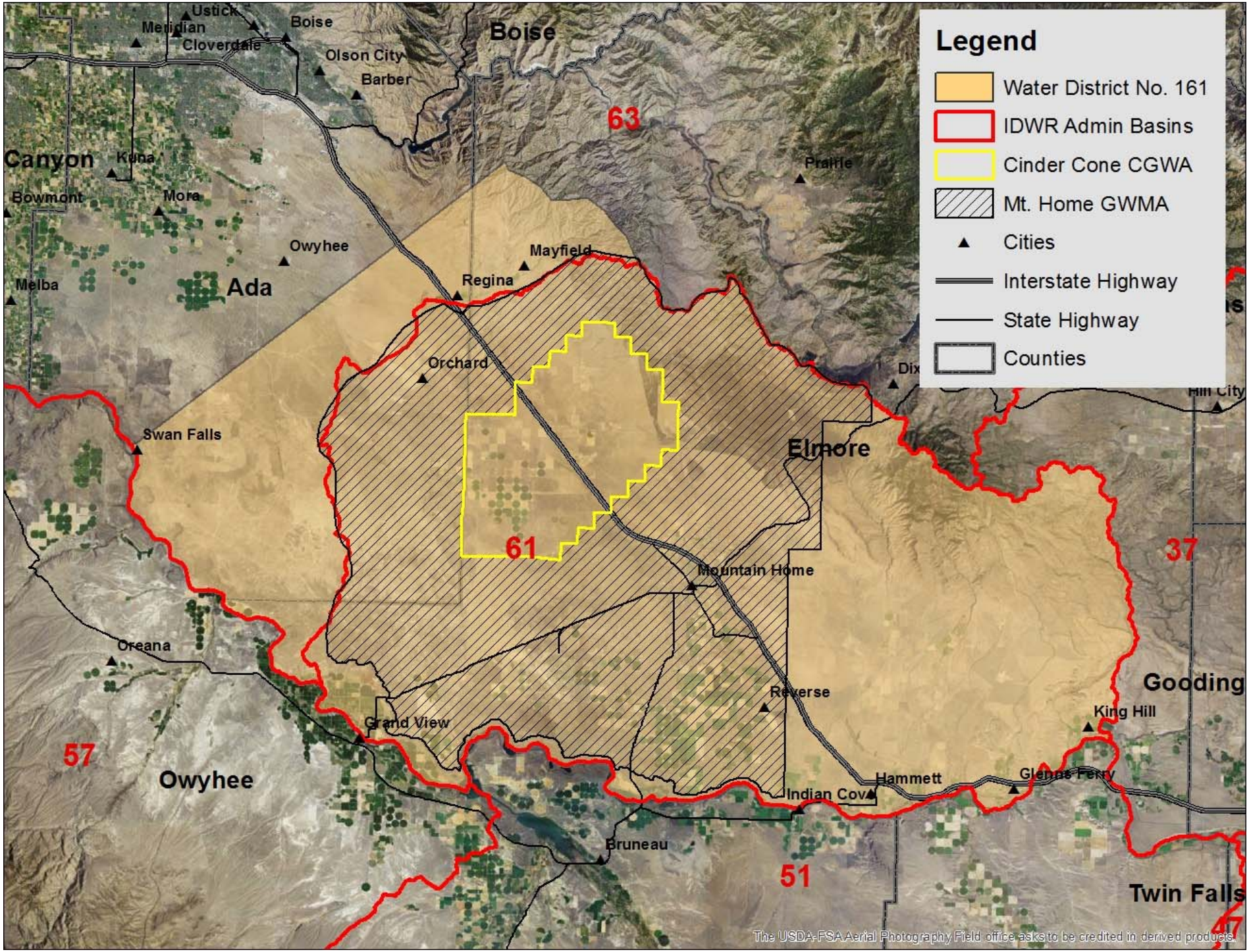

Legend
Cinder Cone CGWA
Mt. Home GWMA
Water Districts
IDWR Admin Basins
Cities
Counties
Owyhee
Mayfield
Regina
Orchard
Ada
Pine
Dixie
Elmore
61-A
Mountain Home
61-C
61-E
61-F
61-D
Reverse
Grand View
King Hill
Hammett
Glenns Ferry
Indian Cove
Owyhee
Bruneau
The USDA-FSA Aerial Photography Field office asks to be credited in derived products.

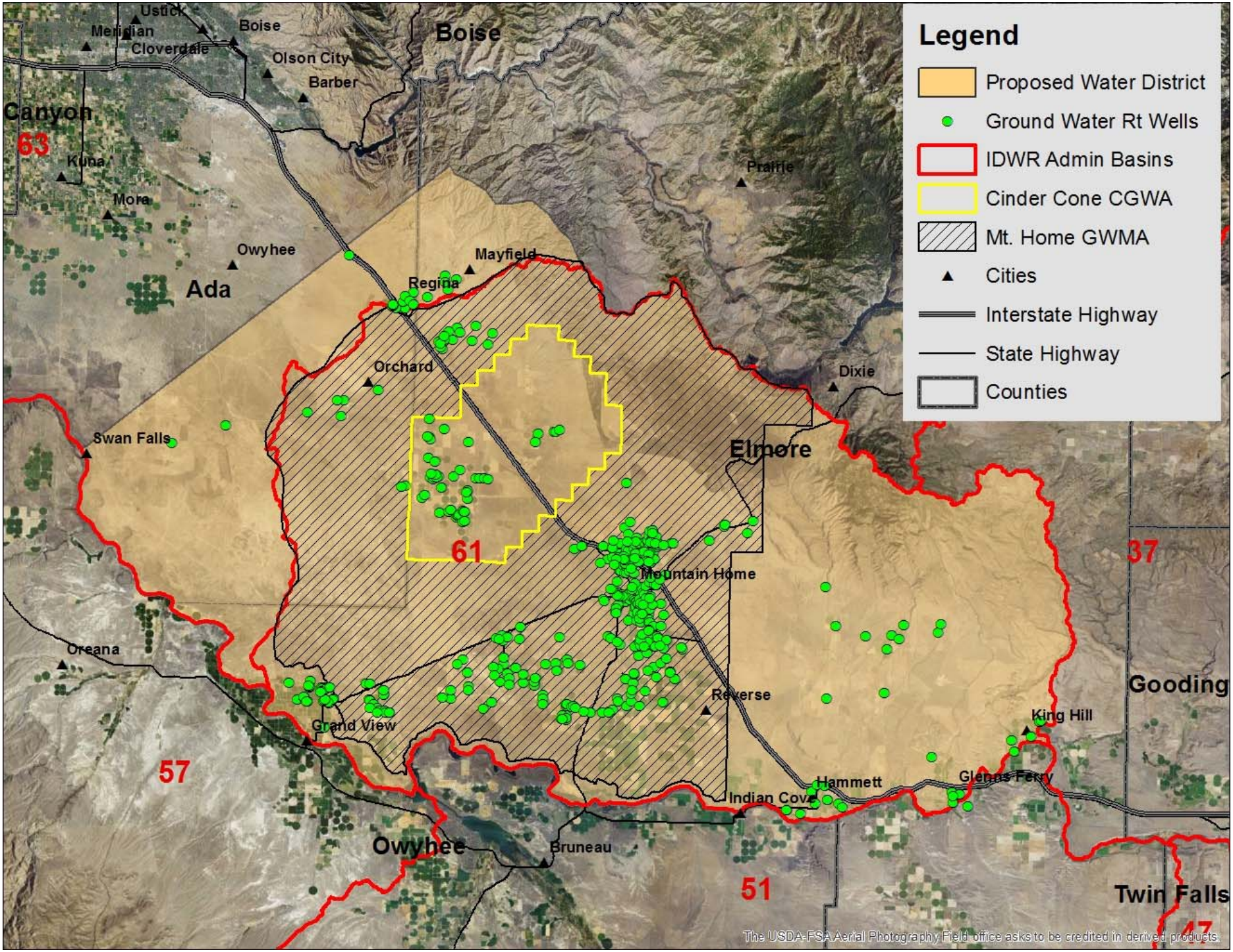
Regulatory History – Moratoriums, CGWA, GWMA

- GW declines have been observed near pumping centers since the 1960s.
- 1981: Cinder Cone Butte Critical Groundwater Area designated.
  - Based on 1981 IDWR Study that estimated withdrawal at 1.5X recharge
- 1982: Mountain Home Groundwater Management Area designated
  - Based on 1982 IDWR study that withdrawals exceed recharge
- 1984 Swan Falls agreement – Trust Water Area
  - Swan Falls controversy results in moratorium from 1977 thru 1988
- 1992 Snake River Moratorium (supplemental uses exempted)
- 1993 Snake R. Moratorium Order amended to exclude MH area
- 1996 – 2006 – Advisory Committee develops draft Management plan

Regulatory History

- 2012: I-84 corridor study determines ground water supplies are limited
- 2016: Water District 161 formed and measurement order issued

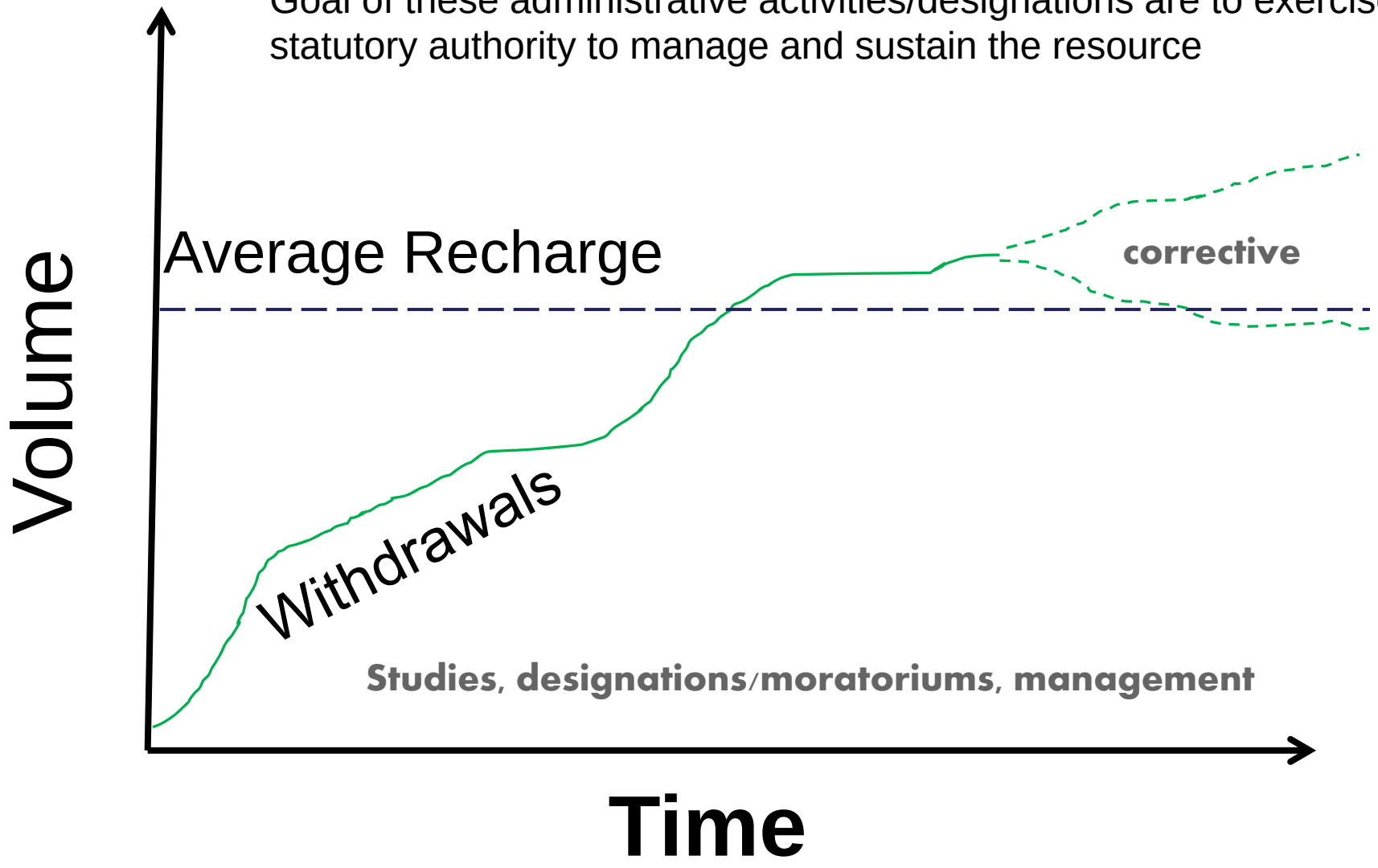

Legend
Water District No. 161
IDWR Admin Basins
Cinder Cone CGWA
Mt. Home GWMA
Cities
Interstate Highway
State Highway
Counties
Ustick
Meridian
Cloverdale
Boise
Olson City
Barber
Boise
63
Canyon
Kuna
Bowmont
Mora
Prairie
Owyhee
Mayfield
Regina
Melba
Ada
Orchard
Swan Falls
Elmore
61
37
Mountain Home
Oreana
Reverse
Gooding
King Hill
Grand View
57
Owyhee
Hammett
Glenns Ferry
Indian Cove
Bruneau
51
Twin Falls
47
The USDA-FSA Aerial Photography Field office asks to be credited in derived products.

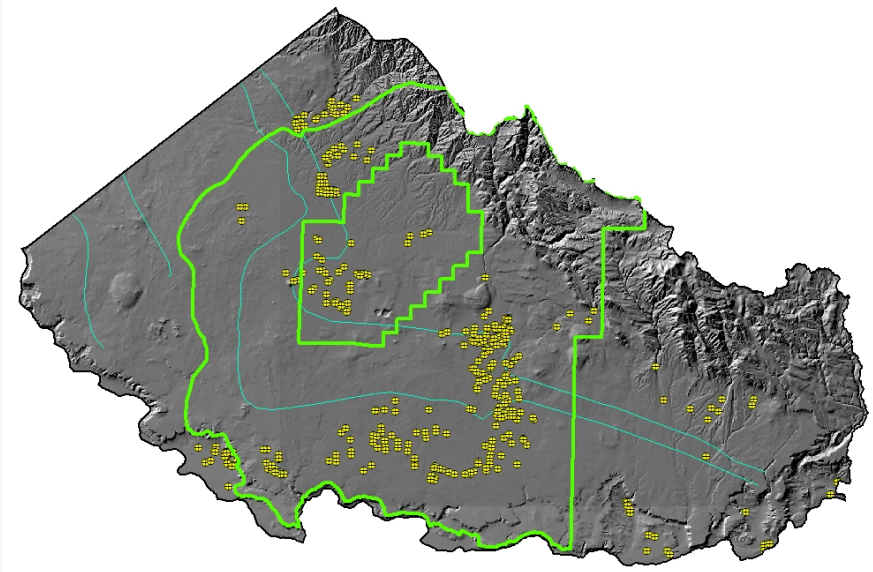

Legend
Proposed Water District
Ground Water Rt Wells
IDWR Admin Basins
Cinder Cone CGWA
Mt. Home GWMA
Cities
Interstate Highway
State Highway
Counties
Ustick
Meridian
Cloverdale
Boise
Boise
Olson City
Barber
Canyon
63
Kuna
Mora
Prairie
Owyhee
Mayfield
Regina
Ada
Orchard
Dixie
Swan Falls
Elmore
61
37
Mountain Home
Oreana
Gooding
Reverse
King Hill
Grand View
57
Hammett
Glenns Ferry
Indian Cove
Owyhee
Bruneau
51
Twin Falls
The USDA-FSA Aerial Photography Field office asks to be credited in derived products.

Reasons for Creating Water District 161

- SRBA is complete
  - SRBA Court issued Final Decree – August 24, 2014
- Administration is required for both surface & ground water rights
  - maintain current/accurate water right records
  - measure and report water use
  - address unauthorized uses, if any &/or as found
  - assure diversions within water right limits/descriptions
- Potential regulation of ground water rights in GWMA/CGWA
  - Director may limit ground water use until there is sufficient supply
  - Director may require measurement & reporting of gw use
    - necessary to evaluate withdrawals vs. recharge
    - necessary if limiting water use
- Potential conjunctive administration of surface & ground water rts. (or administration of senior gw rts. vs. junior gw rights)

Goal of these administrative activities/designations are to exercise statutory authority to manage and sustain the resource





Water District is part of water mgmt. toolkit:

- Water use (measurement)/data collection)
- Water Right regulation

WD Stats:

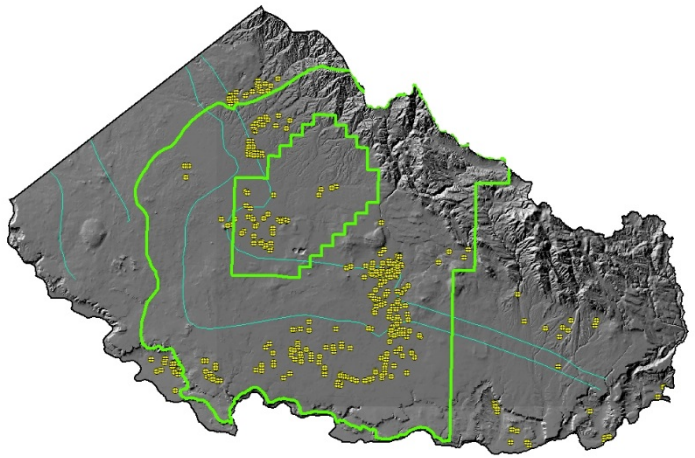
- Approximately 480 ground water rights within WD
- Approximately 270 water users
- Potential for >100K acre-feet of gw diversion – Likely closer to 80K
- About 340 - 360 wells will require meters and reporting
- Adopted 2017 budget of about $45K – local assistant watermaster

Measurement Order Details:

- Order applies to irrig. diversions > 5 acres & non-irrigation diversions >0.24 cfs
  - Most domestic and stockwater uses exempt
  - Some sub-divisions included
- Meters to be installed by 2019 irrigation season (or January, 2019 for non-irrig.)
- Up to 340 - 360 wells will require meters and reporting
  - (some of these wells not used due to non-use, CRP etc.)
- Standard flow meters = magnetic (“mag”) flow meters
  - Variances limited
  - Mag meters about $2,500 - $3,500 for 10” diameter plus install
  - Meters should be read several times per year
  - Data entered/stored to IDWR database (WMIS)

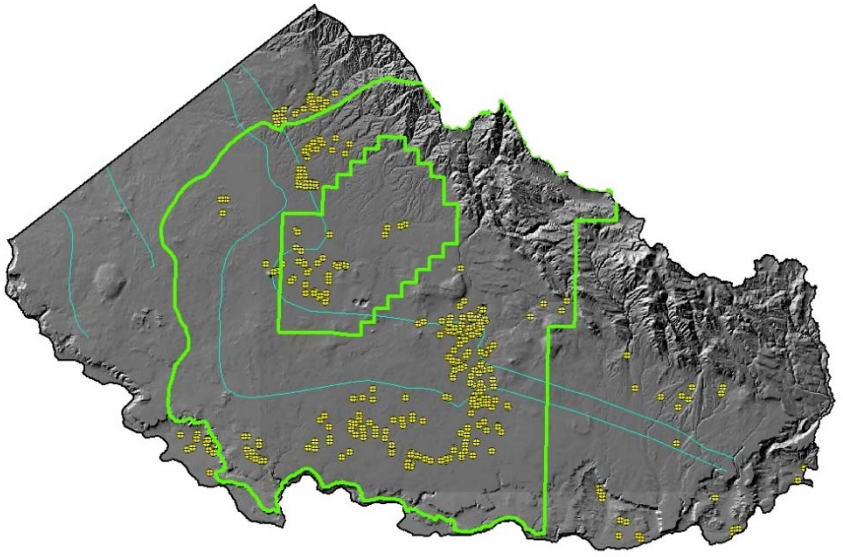
Water District Current Status:

- 2017: district begins operations
  - Watermaster: Nick Miller, IDWR Western Regional Mgr.
  - Assist. watermaster: Ed Van Etten, Mtn. Home (started summer 2017)
  - Adopted 2017 budget of about $45K – local assistant watermaster
  - Advisory committee selected
  - Inventory of Groundwater Wells by Assistant WM
    - Over 120 wells inventoried
  - Some flow meter installations begin
  - Local users working towards possible cost-share grant opportunities



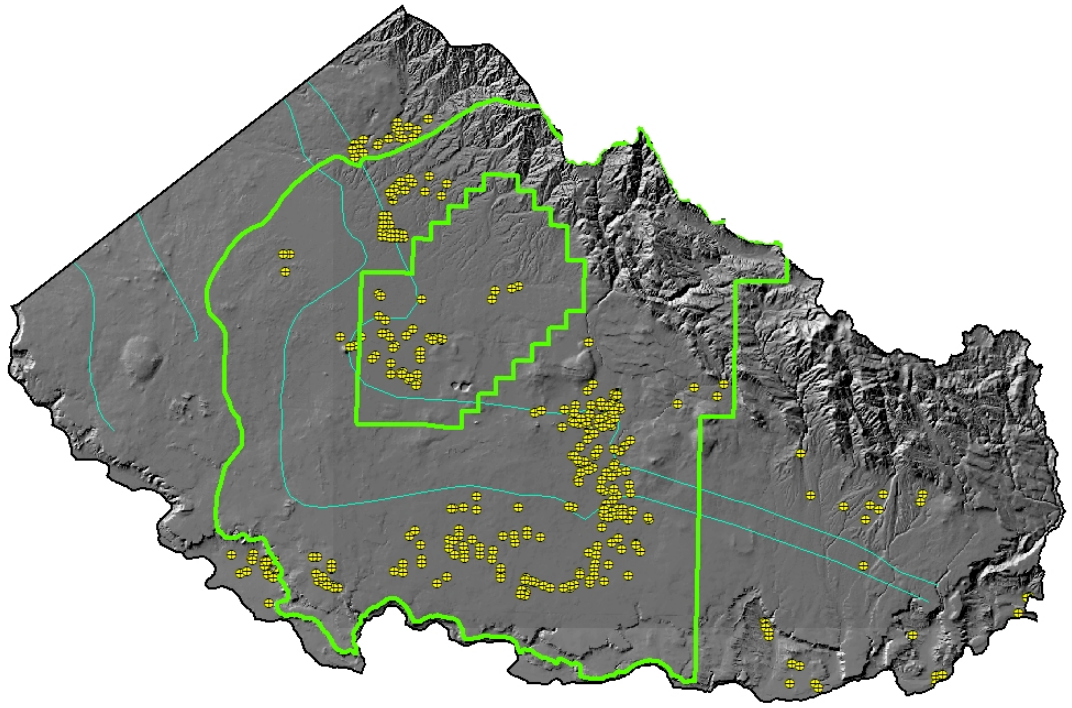
Near-term WD Activities/Goals:

- Full time local WM in 1-2 years (phase out IDWR staff)
- 2019 – Flow meters installed and data collection begins in earnest.
  - Some follow-up compliance may be required with IDWR assistance
- IDWR will initiate review of imagery and water rights place of use 2017-2018
  - Notify users of any potential discrepancies & need for corrections via transfers



Potential Future Water District Management Activities:

- Diversion data used for more detailed supply-demand analysis.
- Respond to delivery calls, implement management or mitigation plans?
- Future is uncertain.



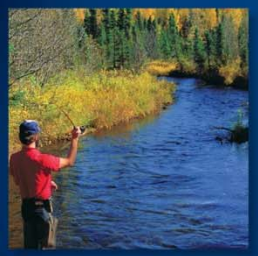

Questions?
VALLEY

Mountain Home Aquifer – Water Uses and Economic Importance

Presented by Brian Patton P.E., Executive Officer, Idaho Water Resource Board

September 17, 2017

IDAHO
Water Resource Board



Topics

- Uses of Water from the Mt. Home Aquifer
- Economic Importance

Water Uses from the Mountain Home Aquifer

• Irrigated Agriculture	69,900 AF/yr	(IDWR)
• City of Mountain Home	4,720 AF/yr	(SPF 2017)
• Mountain Home AFB	1,630 AF/yr	(SPF 2016)
	(has been higher in past)	
• Rural Domestic	?	
TOTAL ESTIMATE	**76,250 AF/yr**	

Economic Importance of Water Use - Agriculture

- Elmore County No. 8 in Idaho counties for total value of agricultural products sold (USDA) – Idaho is No. 2 or 3 agricultural state in the West

- Elmore County total market value of ag products sold is $350M (USDA 2012) – adding multiplier brings total economic impact to $600M

- Elmore County has about 90,000 irrigated agricultural acres with 30,000 acres supplied from aquifer

Economic Importance of Water Use - City

- Population of 14,000
- Business and industry
- Supports agriculture and AFB

2010 Economic Impact Analysis by MHAFB and Boise State University

- Total Economic Impact $1.02 Billion annually

  Direct Impact $474 Million annually

  Multiplier Impact $546 Million annually

- 5,306 Direct Jobs

2015 Economic Impact Analysis by MHAFB

- Direct Impact $342 Million annually
- 4,274 Direct Jobs

Did not report Multiplier Impact or Total Economic Impact

Questions?


WARNING
THIS ROAD CROSSES
US AIR FORCE BOMBING RANGE
FOR THE NEXT 12 MILES
OBJECTS MAY FALL FROM AIRCRAFT

MATERIALS MAY BE PROVIDED AT THE

IWRB MEETING

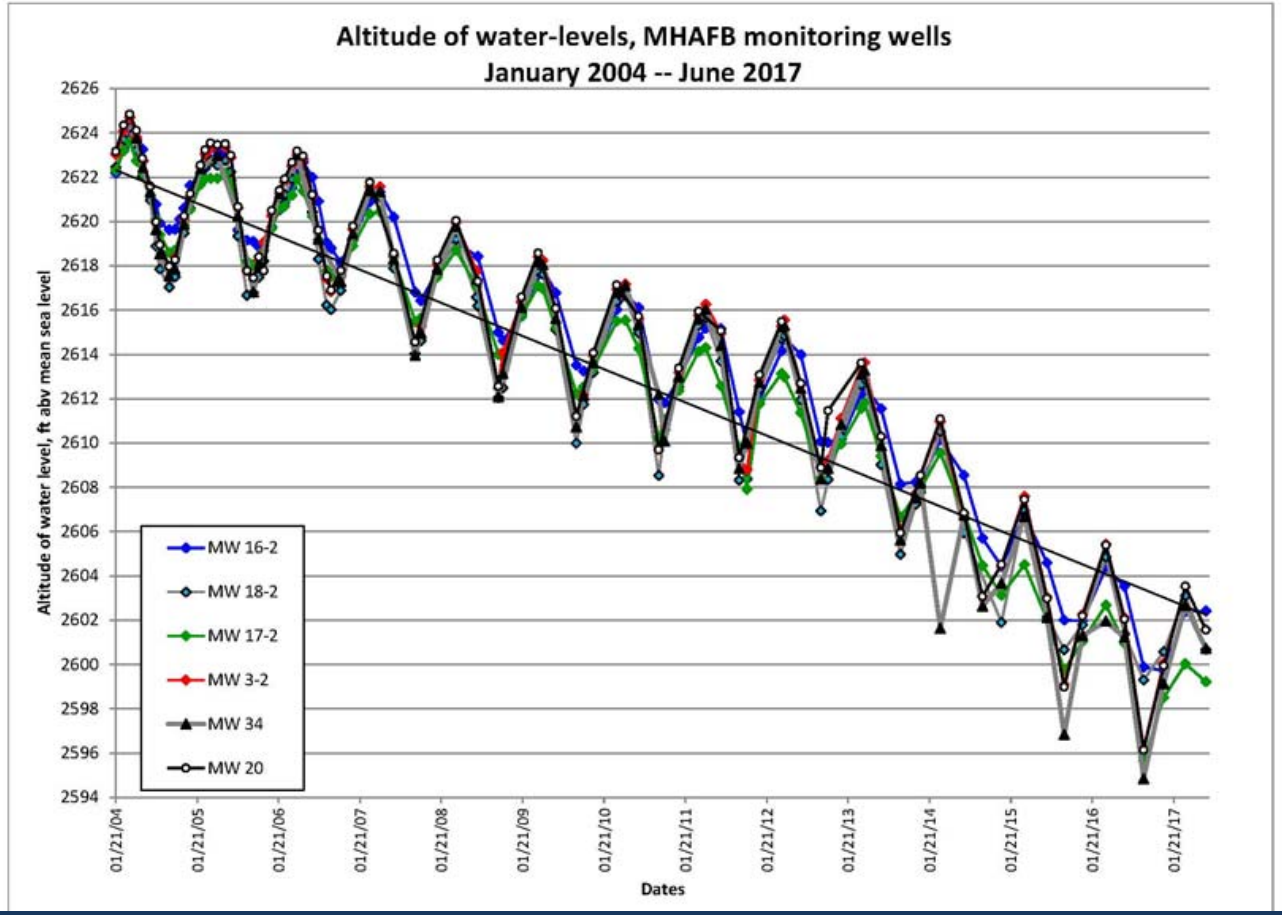
IDAHO Water Resource Board

Mountain Home Air Force Base (MHAFB) Water Supply and Pipeline Project

Idaho Water Resource Board Meeting September 14th, 2017

Randall A. Broesch P.E. • Water Projects Section• Staff Engineer

MHAFB Water Supply & Pipeline Project



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MHAFB Water Supply & Pipeline Project

Owner's Advisor Update

- Project Delivery Method Selection
- Procurement Services – 2 Step Process
  - Pre-SOQ meeting August 24th / Submittals due September 26th
  - RFP scheduled to start in January 2018
- Raw Water Characteristic Study
- Water Treatment Pilot Study
- Technical Project Components
  - Cost Estimating
  - IDEQ Permitting/Certifications
  - Topographic Survey
  - Geotechnical Investigations

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MHAFB Water Supply & Pipeline Project

Work In Progress

- Environmental Assessment (EA) Conducted by MHAFB & BLM
- Water Utility Service Agreement (WUSA)
- Revenue Bond Financing
- Procurement of Design-Build-Operate Services
- Revenue Bond Financing
- Water Right Process
- Permitting

MHAFB Water Supply & Pipeline Project

Questions or Considerations?

MATERIALS MAY BE PROVIDED AT THE

IWRB MEETING

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