Free Roaming Equids and Riparian Areas

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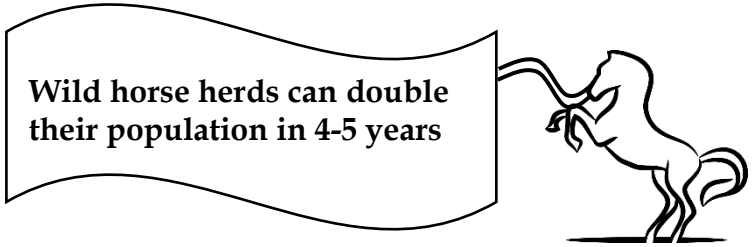
Well-worn rut

- Wild horses and burros exceed maximum appropriate management level (AML) or carrying capacity by ~ 3x
- Great Basin ecosystems did not evolve with continuous, large ungulate pressure
  - Regardless…
- Controversy and conflict continues to influence policy formation, management actions, and ecological management

By the Numbers…

	Number of HMAs	Acres (millions)	Max AML	Current On-Range Population*
California	21	2.5	2,200	7,020
Nevada	83	15.7	12,811	49,268
National	177	31.6	26,690	82,883



*Prior to 2023 foaling season

Costs of Overpopulation

- Increasing human-animal conflicts
- Increasing crisis management
- WHB budget allocations

Costs of Overpopulation

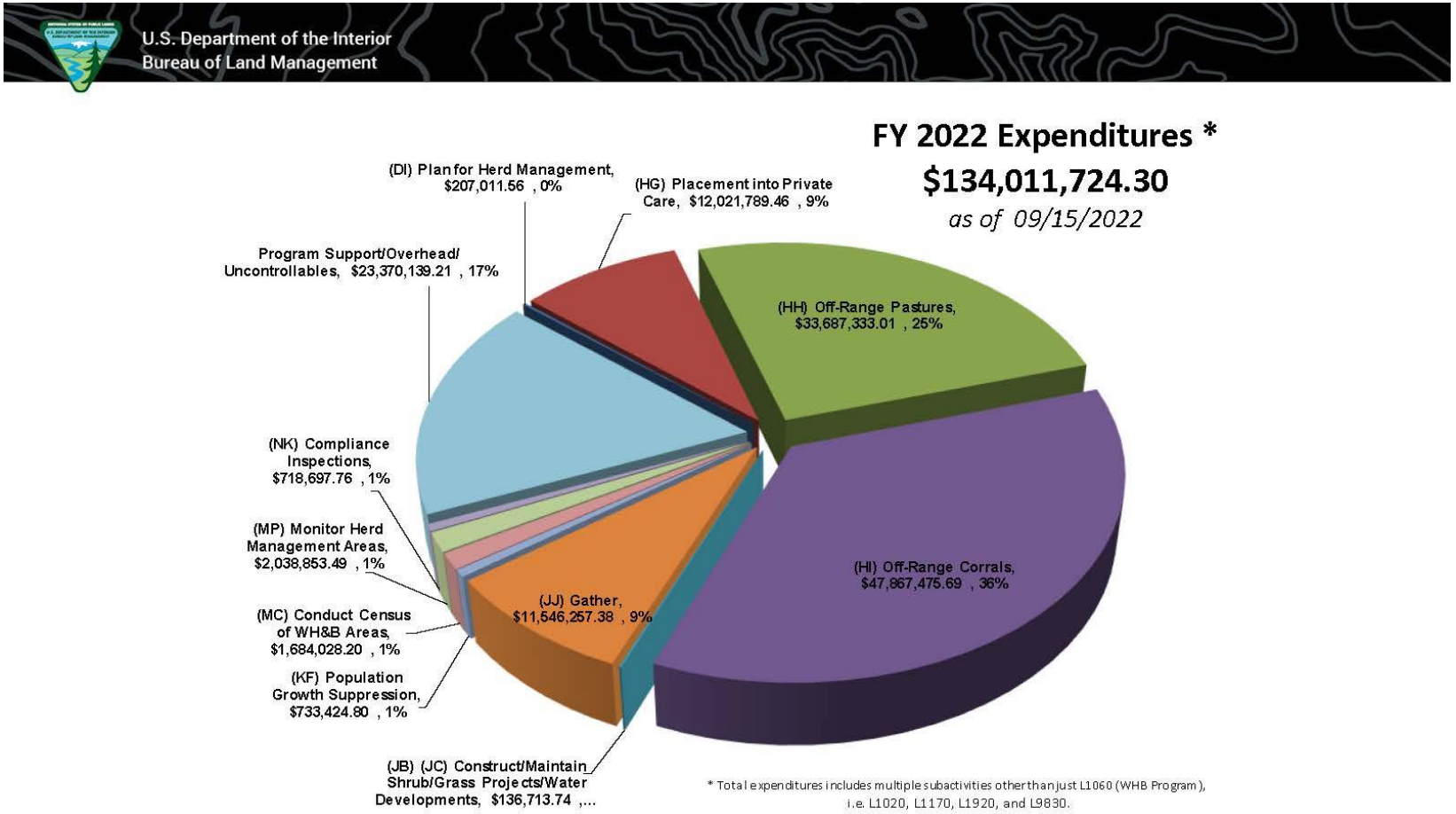
- Increasing human-animal conflicts
  - Domestic animal harassment
  - Private property damage
  - Vehicle collisions

Costs of Overpopulation

- Increasing crisis management
  - Emergency gathers
  - Animals facing starvation, dehydration

Costs of Overpopulation

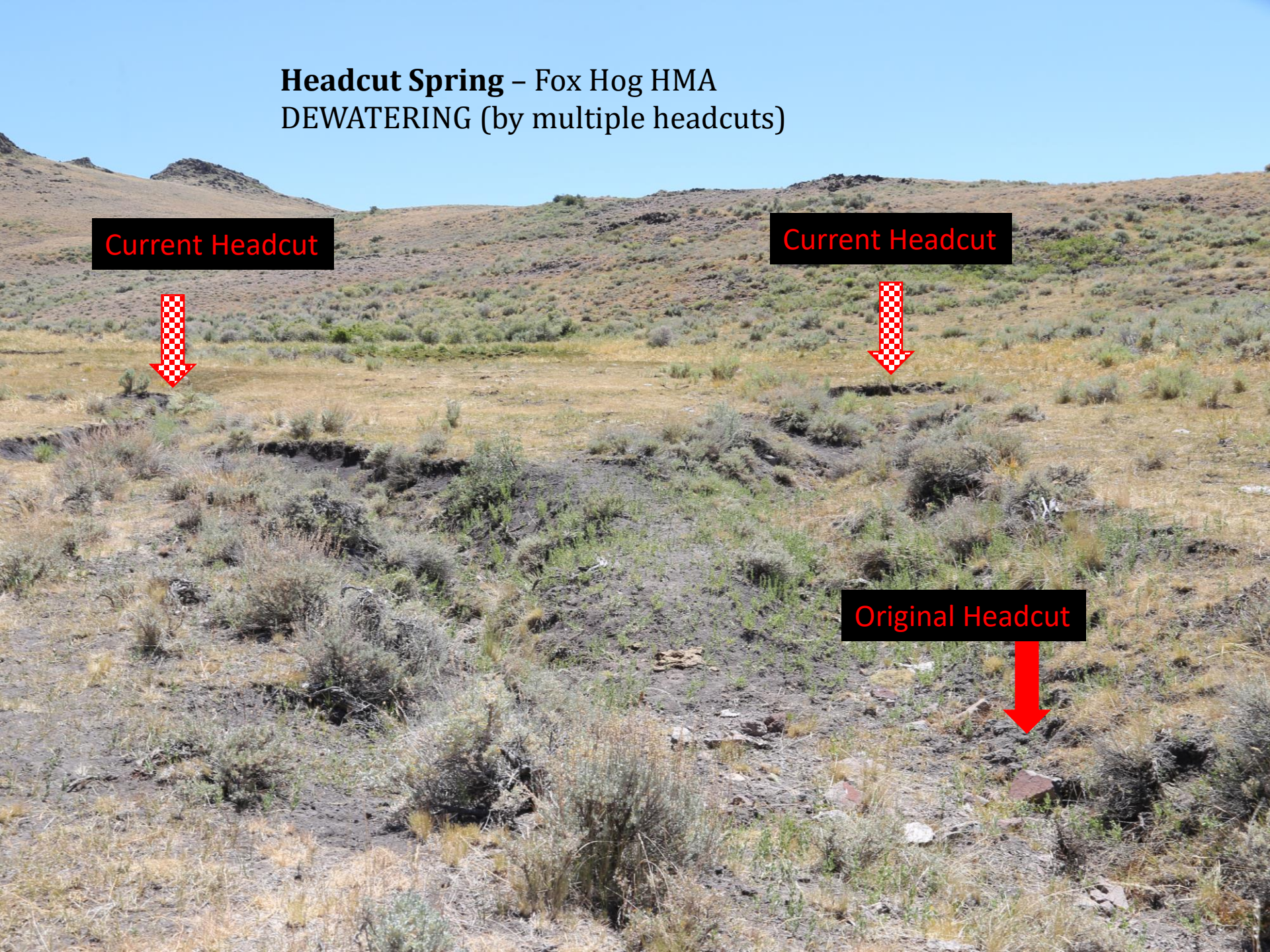
- BLM's $134 million dollar WHB budget

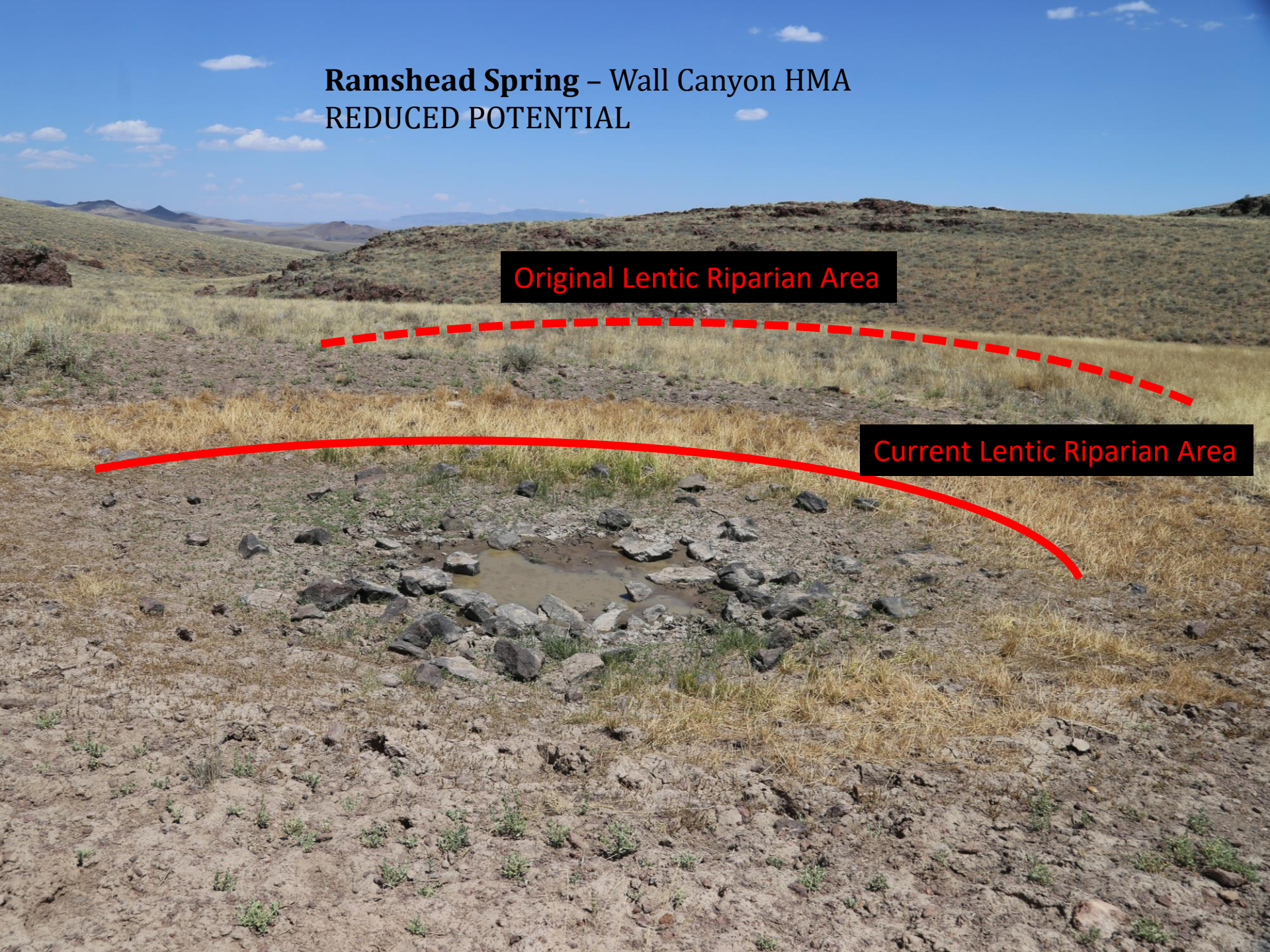


Costs of Overpopulation

- Degradation of habitats
  - Riparian
  - Upland

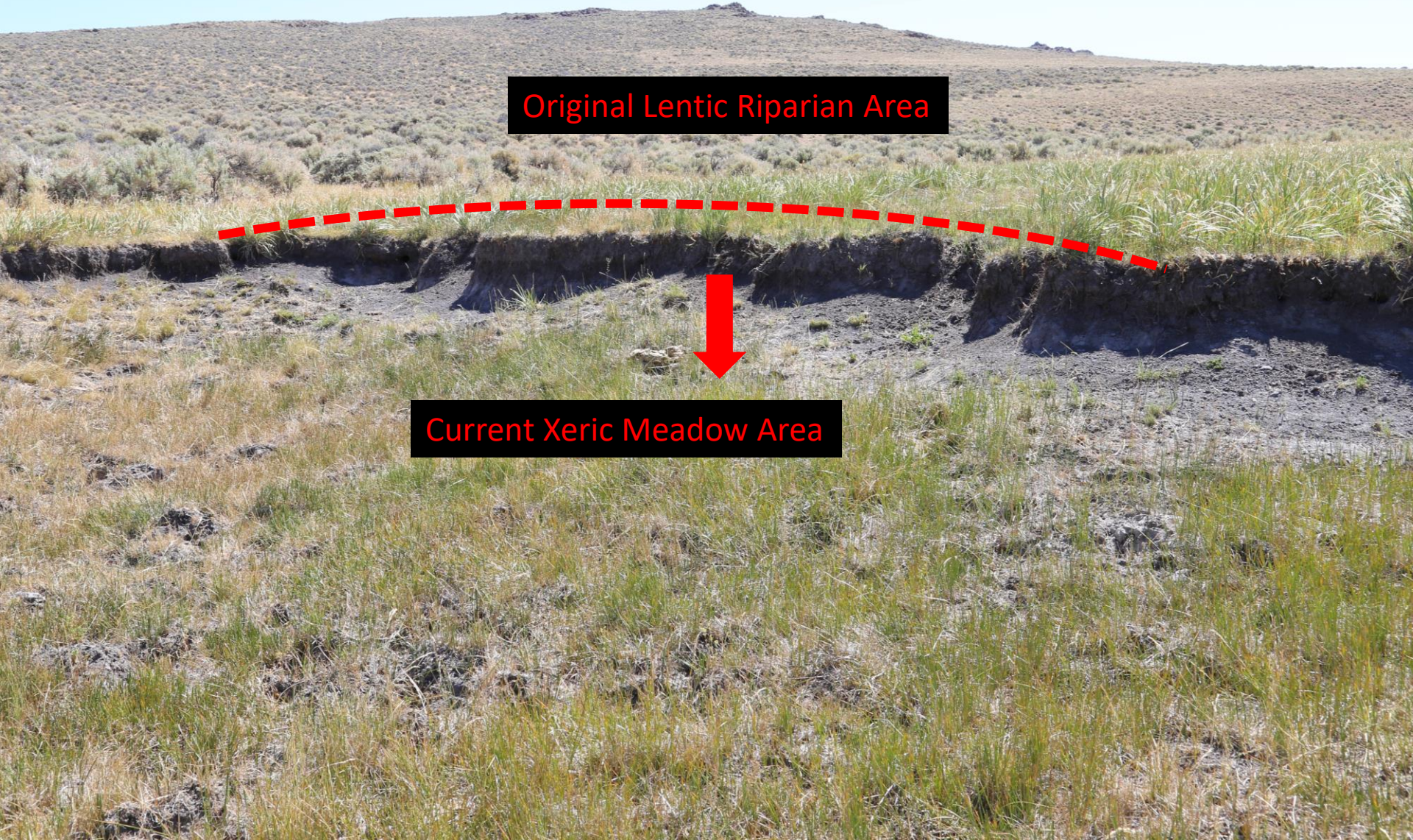
Riparian Degradation


Headcut Spring – Fox Hog HMA
DEWATERING (by multiple headcuts)
Current Headcut
Current Headcut
Original Headcut

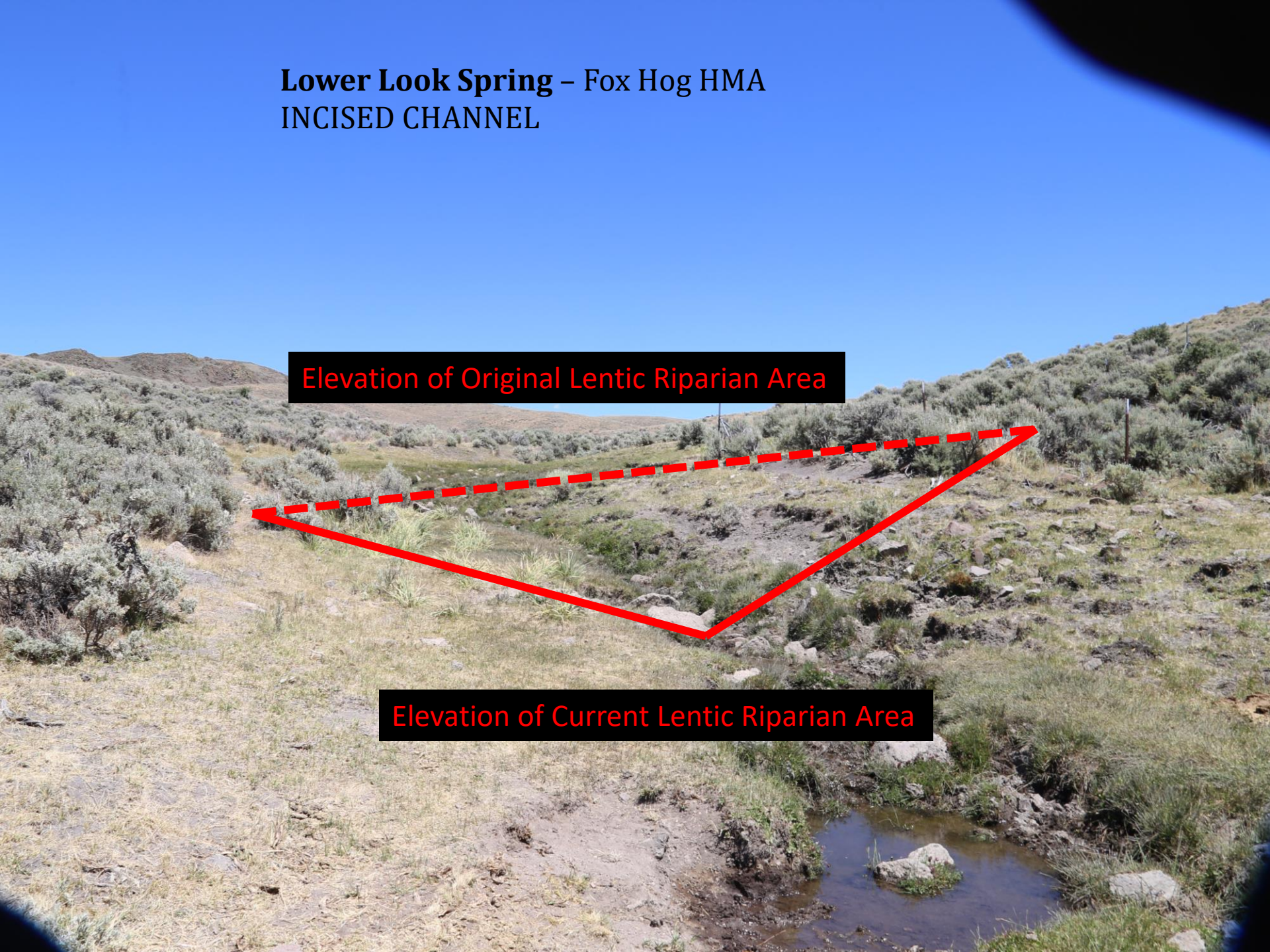

Ramshead Spring – Wall Canyon HMA
REDUCED POTENTIAL
Original Lentic Riparian Area
Current Lentic Riparian Area

Cherry Spring – High Rock Canyon HMA
LOSS OF RIPARIAN SOILS (approximately 6 feet)

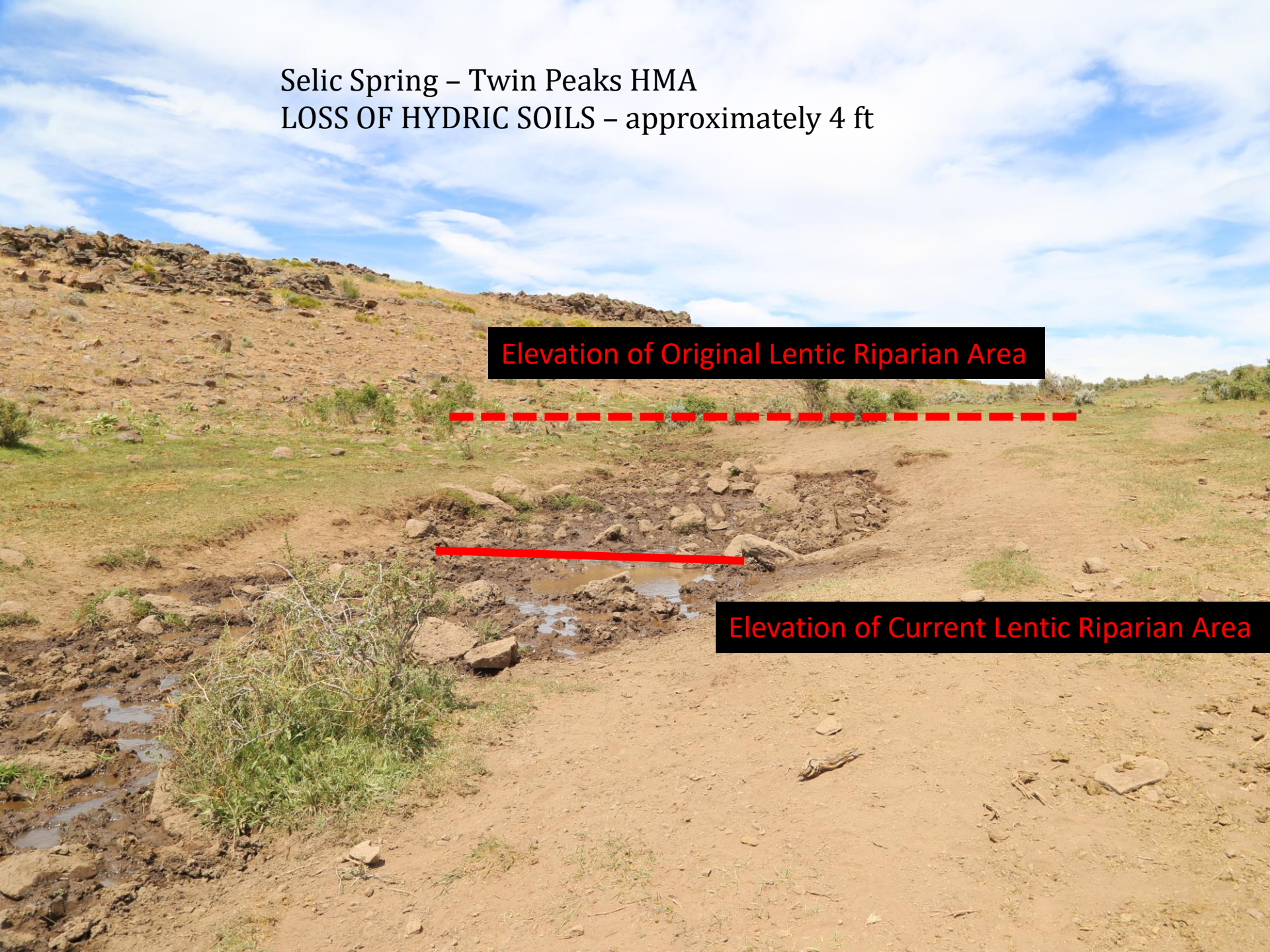
Iris Spring – Fox Hog HMA
DEWATERED RIPARIAN due to loss of connection to groundwater



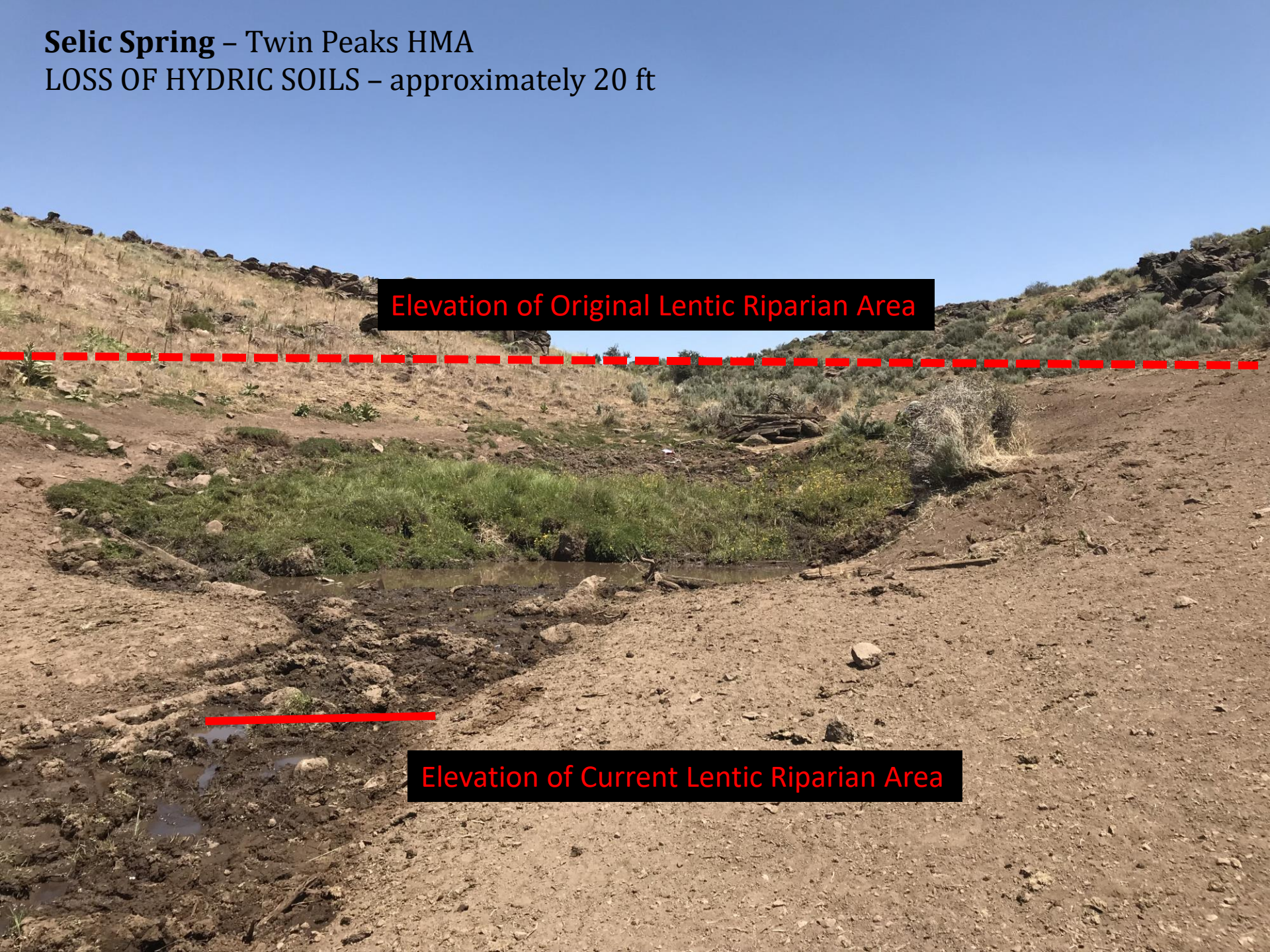
Lower Look Spring – Fox Hog HMA
INCISED CHANNEL



Shingle Spring – Fox Hog HMA
DECREASING RIPARIAN AREA


Selic Spring – Twin Peaks HMA
LOSS OF HYDRIC SOILS – approximately 4 ft
Elevation of Original Lentic Riparian Area
Elevation of Current Lentic Riparian Area

Selic Spring – Twin Peaks HMA
LOSS OF HYDRIC SOILS – approximately 20 ft

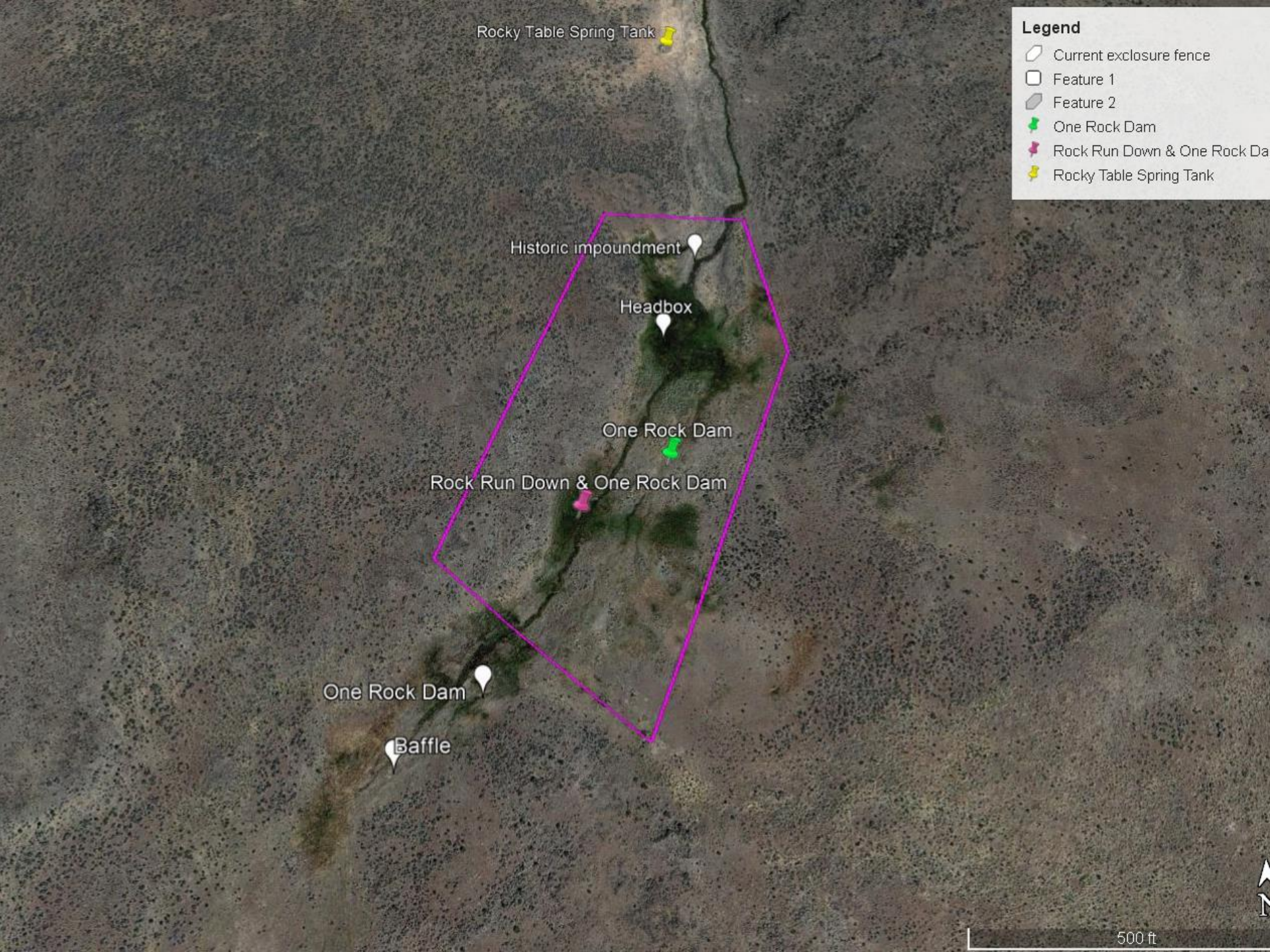


YIKES! Now what?

Riparian Restoration

- Use native materials
  - Rocks
  - Trees
  - Shrubs
- Volunteer networks
- No heavy equipment
- Work with nature to heal erosion and degradation

Rocky Table Spring (lentic)


Rocky Table Spring Tank
Historic impoundment
Headbox
One Rock Dam
Rock Run Down & One Rock Dam
One Rock Dam
Baffle
Legend
Current exclosure fence
Feature 1
Feature 2
One Rock Dam
Rock Run Down & One Rock Da
Rocky Table Spring Tank
500 ft

Rocky Table Spring Challenges

- Degraded spring complex (multiple sources)
- Historic impoundments
- Erosion and channelization
- Riparian destabilization features
  - Headcuts
  - Nick points
  - Cut banks
- Previous gabions in place
- Encroaching upland species

Rocky Table Spring Implementation

Major cultural resource area	• Archeology monitor required • Building materials (rocks) had to be brought in from elsewhere
Located in a Wilderness Study Area	• No new roads developed
Livestock and WHB grazing	• Animals still need access to water

Rocky Table Spring Structures

- **One Rock Dam (ORD)**
  - Low grade control structure
  - Stabilize bed of channel by:
    1. Slowing flow of water
    2. Increasing roughness
    3. Recruiting vegetation
    4. Capturing sediment
    5. Gradually raising bed level
  - Passive water harvesting
  - Also called Zeedyk structure

- **Rock Mulch Rundown**
  - Headcut control structure
  - Mulch serves to:
    - Slow runoff
    - Increase soil moisture
    - Recruit vegetation
    - Prevent headcut migration
  - Low energy only

Rock Mulch Rundown – Before (Oct 2018)

Rock Mulch Rundown – After (Oct 2018)

Rock Mulch Rundown – 1 year later (Aug 2019)

Rock Mulch Rundown – 5 years later (Aug 2023)

Rock Mulch Rundown – Before (Oct 2018)

Rock Mulch Rundown – 1 year later (Aug 2019)

Rock Mulch Rundown and One Rock Dam – Before (Oct 2018)

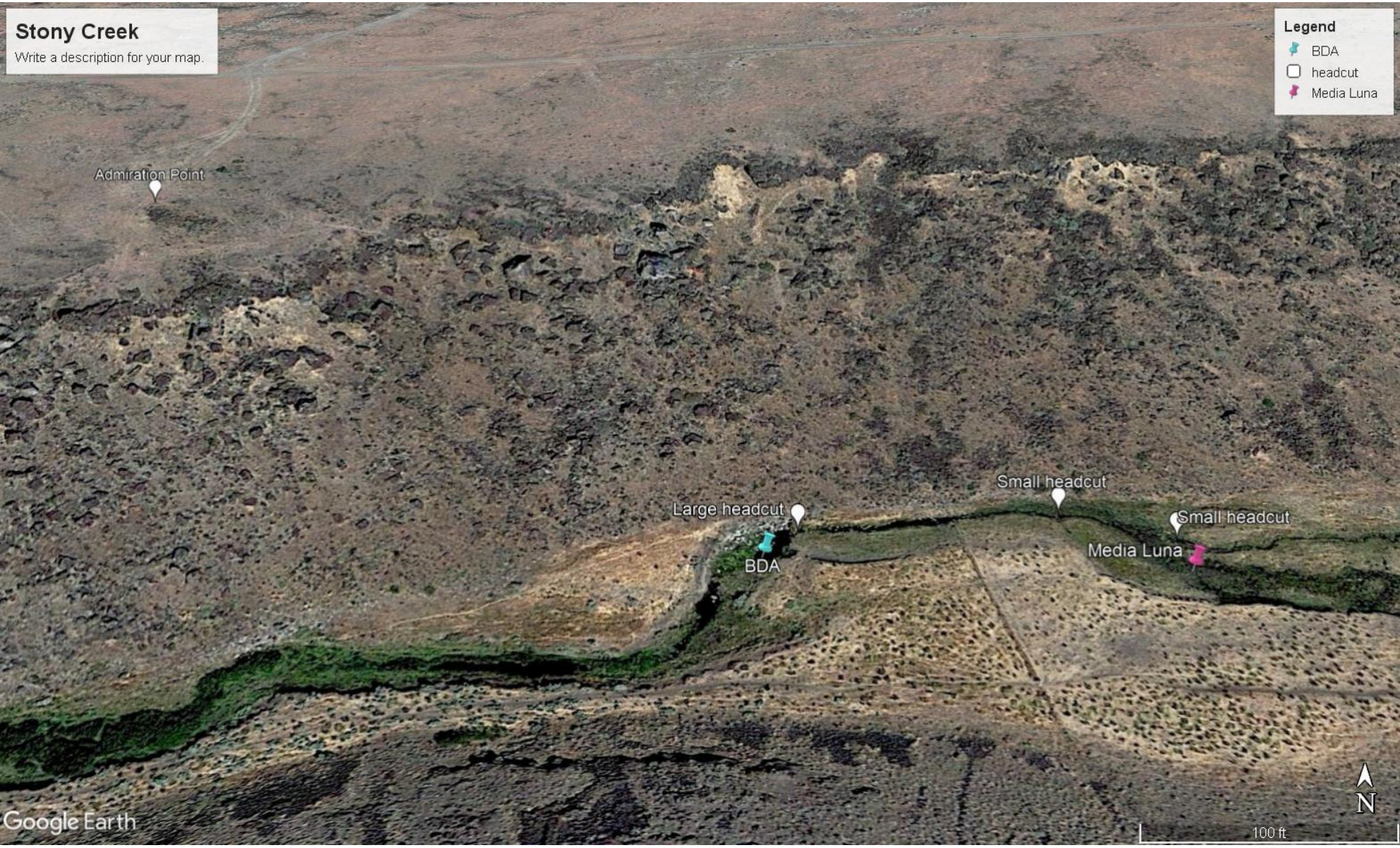
Rock Mulch Rundown and One Rock Dam – After (Oct 2018)

Rock Mulch Rundown and One Rock Dam – 1 year later (Aug 2019)

Rocky Table Spring Future

- ✓ Continue to monitor rock structures
- ✓ Exclude spring sources by fencing
- Redevelop headbox
- ✓ Pipe water to tank
- ✓ Gather excess WHB
- Keep exclosure gate closed

Stony Creek (lotic)


Stony Creek
Write a description for your map.
Legend
BDA
headcut
Media Luna
Admiration Point
Large headcut
BDA
Small headcut
Small headcut
Media Luna
N
100 ft
Google Earth

Stony Creek Challenges

- Large headcut (6 ft drop)
- Intermingled private property
- Erosion and channelization
- Riparian destabilization features
  - Headcuts
  - Nick points
  - Cut banks
- Main water source for livestock and wildlife
- Encroaching upland species

Stony Creek Structures

- Beaver Dam Analog (BDA)
  - Used to mitigate headcut
  - Creates splash pool
  - Designed to dissipate energy and deposit sediment load
  - Prevents headcut from migrating upstream
  - Maintain soil moisture
  - Encourage establishment of protective vegetation
- Media Luna
  - Manage sheet flow and prevent erosion
  - Create a depositional area on flat ground
  - Disperses erosive channelized flow

Beaver Dam Analog (BDA) – Before (Oct 2018)

Beaver Dam Analog (BDA) – During (Oct 2018)

Beaver Dam Analog (BDA) – During (Oct 2018)

Beaver Dam Analog (BDA) – During (Oct 2018)

Beaver Dam Analog (BDA) – After (Oct 2018)

Beaver Dam Analog (BDA) – After (Dec 2018)

Beaver Dam Analog (BDA) – After (May 2019)

Beaver Dam Analog (BDA) – After (Dec 2018)
Downstream view

Beaver Dam Analog (BDA) – After (May 2019)
Downstream view

Media Luna – After (Dec 2018)

Media Luna – After (May 2019)

Media Luna – After (June 2021)

Stony Creek Future

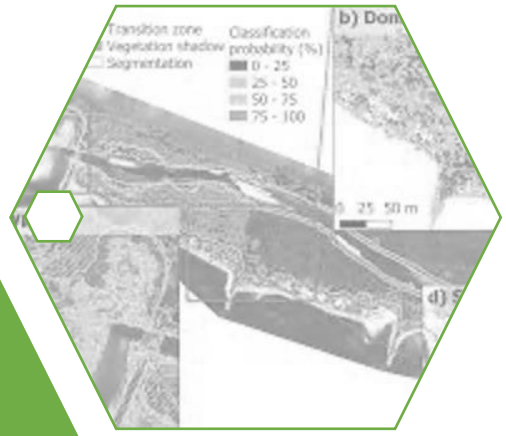
- ✓ Gather excess WHB
- Build more rock structures to spread flow and reduce channelization
- Rework original rock weirs into one rock dam (ORD) structures
- Collaborate with partners to work with private landowners
- Change timing and duration of livestock permits to facilitate recovery

What's Next?

- FENCE ALL RIPARIAN AREAS?!?

Indian Spring - Massacre Lakes HMA (fenced ~30 years ago)

Into the Future…



Database

Research

Adaptive Management

Questions?