



Snake River WTP: Idaho's Newest Surface Water Treatment Plant

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Acknowledgements

- Mountain Home Air Force Base
- US Army Corp of Engineers Seattle District
- Air Force Civil Engineer Center
- Idaho Department of Environmental Quality
- Idaho Department of Water Resources
- HDR
- RSCI Group / Jacobs





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- 01 Background
- 02 Changing water supply
- 03 Water quality challenges
- 04 New water treatment plant
- 05 Current situation

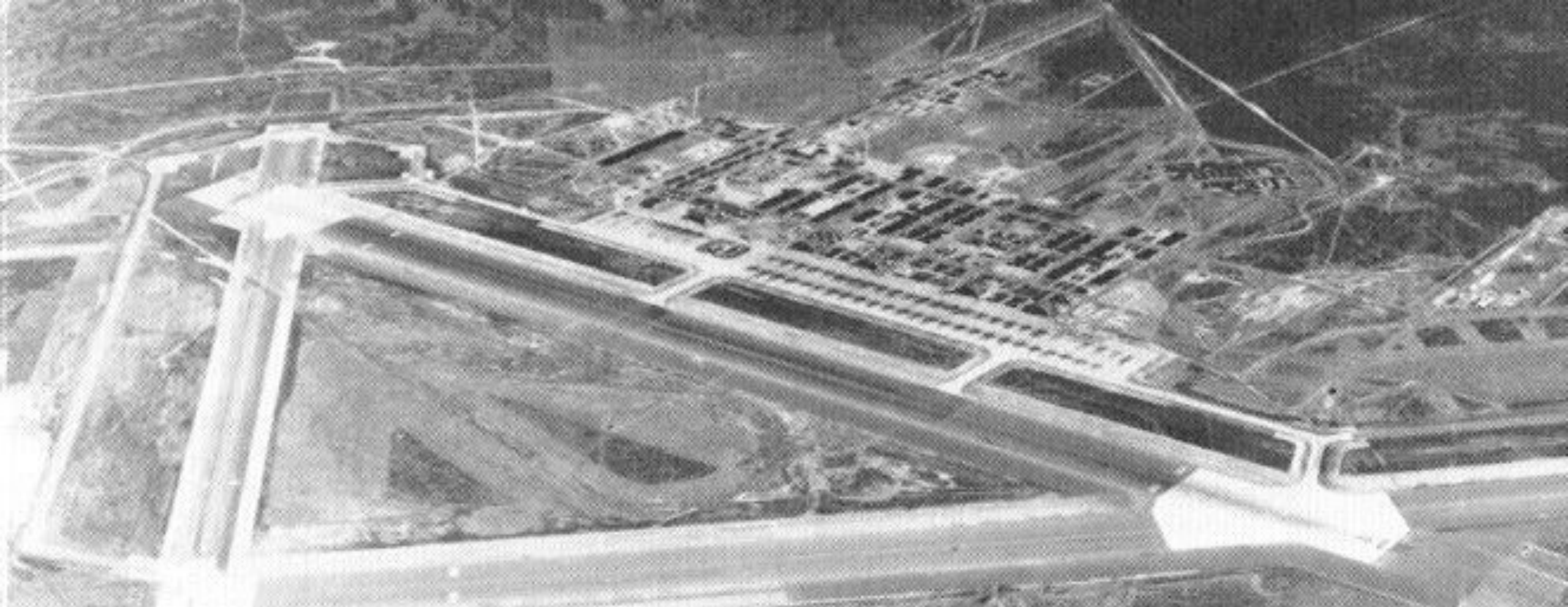


Background



Mountain Home Air Force Base

- 44 miles southeast of Boise
- Opened in June 1943 to train pilots for World War 2.
- Current home to:
 - US Air Force's 366th Fighter Wing
 - Republic of Singapore Air Force (428th Fighter Squadron)
- \$909 million economic impact to Idaho's economy in 2024 (Bureau of Economic Analysis, 2025)



Mountain Home Army Air Field, June 1945

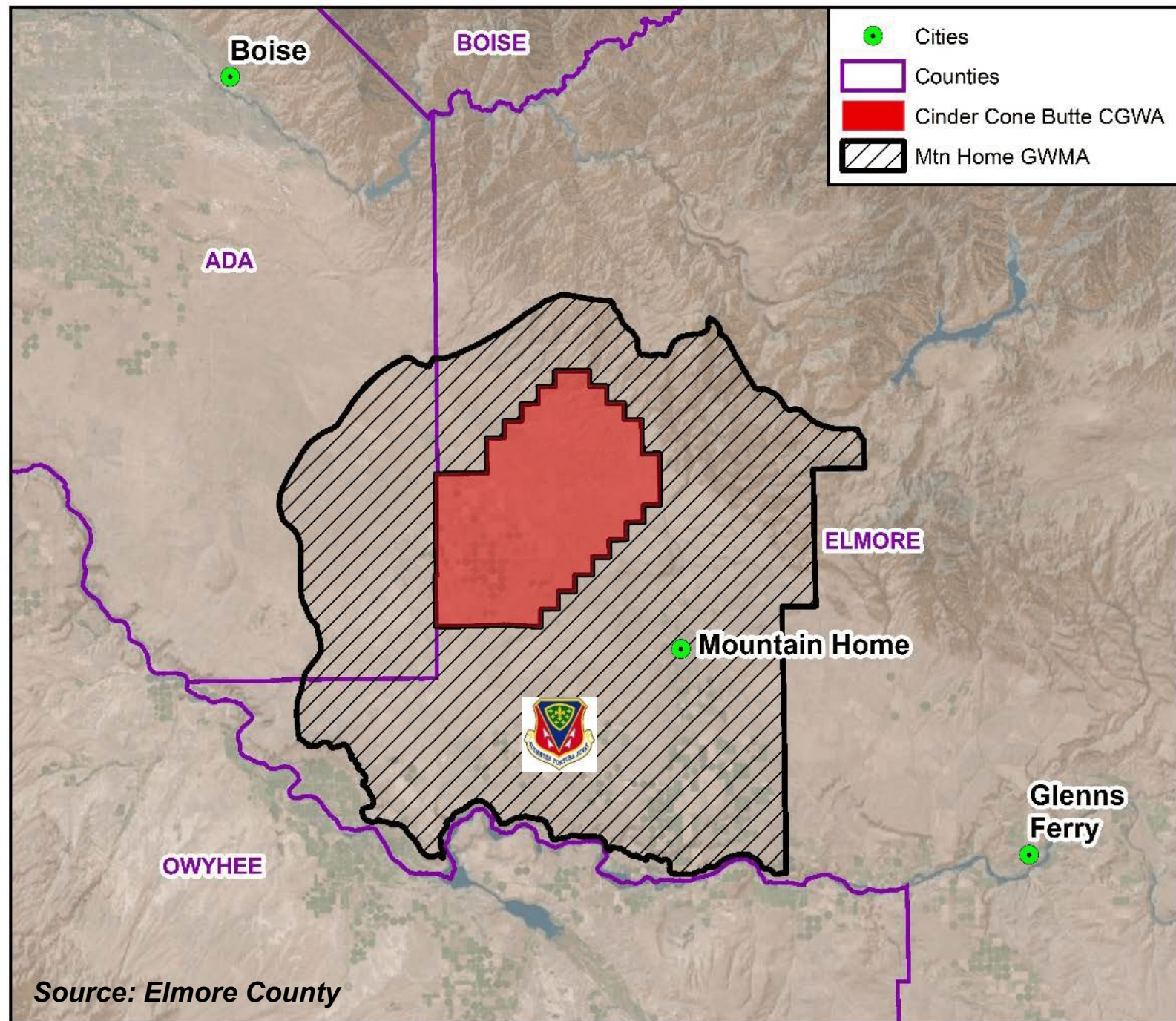
**9,400 active duty + reserves,
dependents, & DoD civilians last year**



Changing water supply

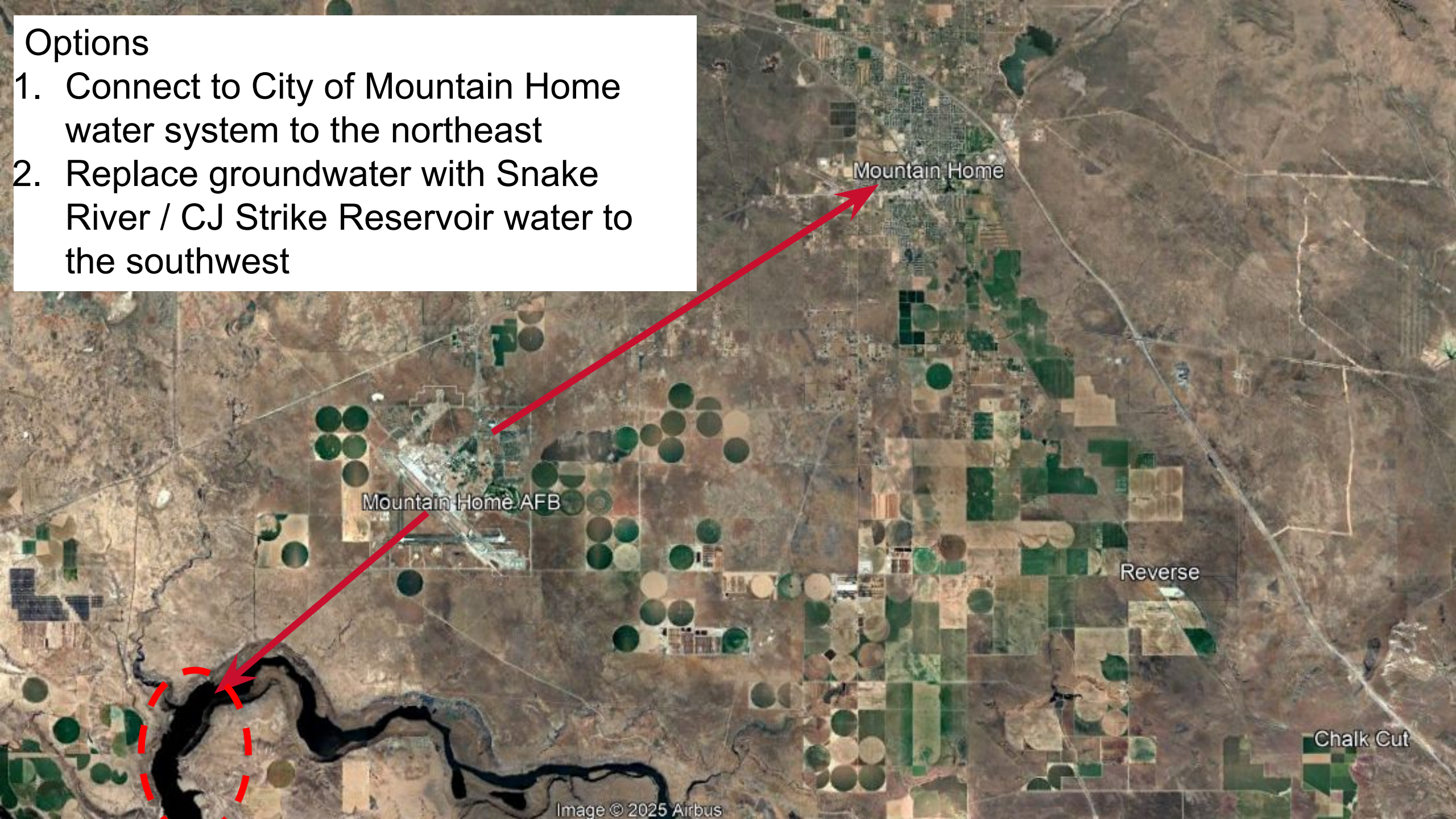
Mountain Home Groundwater Management Area

- Base and others in GWMA draws groundwater from Bruneau Formation
- Water levels have declined >100 feet in some areas
- Declining at ~2 ft/year
- Projected to go dry in 30 years



Options

1. Connect to City of Mountain Home water system to the northeast
2. Replace groundwater with Snake River / CJ Strike Reservoir water to the southwest



Water supply selection

- USAF decided to go to the Snake River / CJ Strike Reservoir
 - City of Mountain Home's wells are in the same depleting aquifer.
 - Control of its own water supply.
- State of Idaho's Mountain Home AFB Water Resilience Project
 - 2014: Idaho Water Resource Board purchases Snake River water rights from J.R. Simplot.
 - 2024: Construction begins on intake, pump station, and raw water pipeline. Funded by IWRB.
 - This summer: construction completed.
 - Later on: State water rights and infrastructure transferred to the Department of Defense.



Source: Idaho Fish and Game

Water quality challenges

Transitioning from groundwater to surface water

- Groundwater issues
 - Some wells have nitrate
 - A few wells have PFAS
- Groundwater treatment
 - Fluoridate + chlorinate
 - Don't use wells with nitrate or PFAS
- Snake River / CJ Strike issues
 - Summertime algae
 - Algal toxins (potential)
 - Seasonal low pH
 - Taste-and-odor
 - Turbidity
 - Chlorine demand
 - PFAS (unregulated)

Obligatory table of water quality parameters

- Surface water sampling from 2011 to 2024

Parameter	Units	Groundwater	Surface Water
pH	std. units	8.2	6.0 – 8.7
Hardness	mg/L as CaCO_3	59	160 – 210
Alkalinity	mg/L as CaCO_3	58	140 – 180
Total dissolved solids	mg/L	104	300 (avg)
Temperarture	deg C	10	4 – 26
Turbidity	NTU	<0.3	0.7 – 52.6
Iron	mg/L	Non-detect	Up to 0.39
Geosmin	ng/L	Non-detect	<3 – 19
MIB	ng/L	Non-detect	<2.5 – 5.1

- Surface water is very different from groundwater



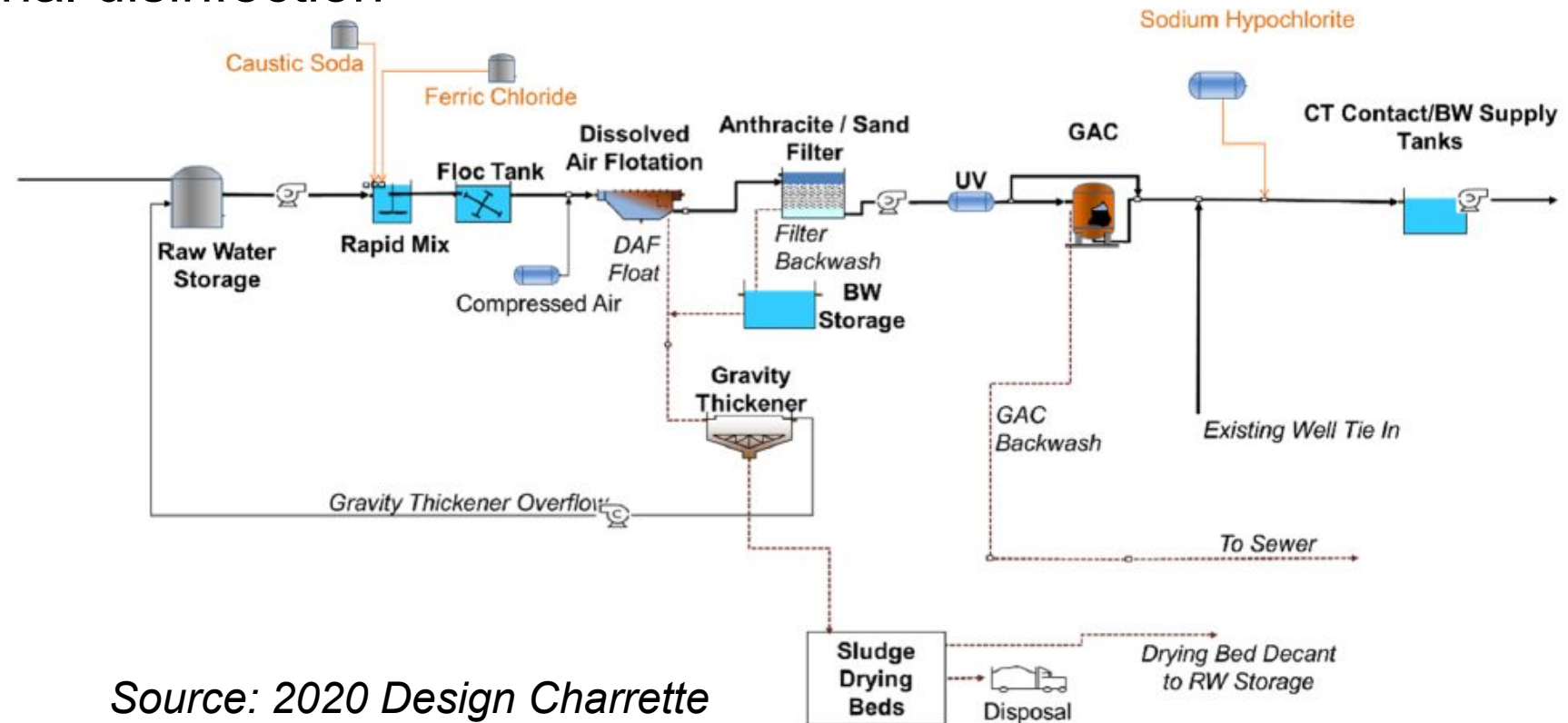
New water treatment plant

Water Treatment Plant

- 3.5 MGD treated water capacity
- Design life of >50 years
- Water quality treatment goals
 - ≤ 64 $\mu\text{g/L}$ TTHM and ≤ 48 $\mu\text{g/L}$ HAA5.
 - Distribution system free chlorine residual is 0.5 – 1.0 mg/L at all locations, with an optimal value of 0.8 mg/L.
 - Geosmin and MIB at < 10 ng/L.
 - Color < 12 PCU.
 - Not to exceed 80 percent of other state and federal MCLs and SMCLs.

Treatment processes selected for bidding

- Dissolved air flotation – algae, turbidity removal
- Anthracite/sand filtration – turbidity removal
- Granular activated carbon – taste/odor, algal toxin, and PFAS removal
- UV reactors – additional disinfection
- Gravity thickener – water recycling

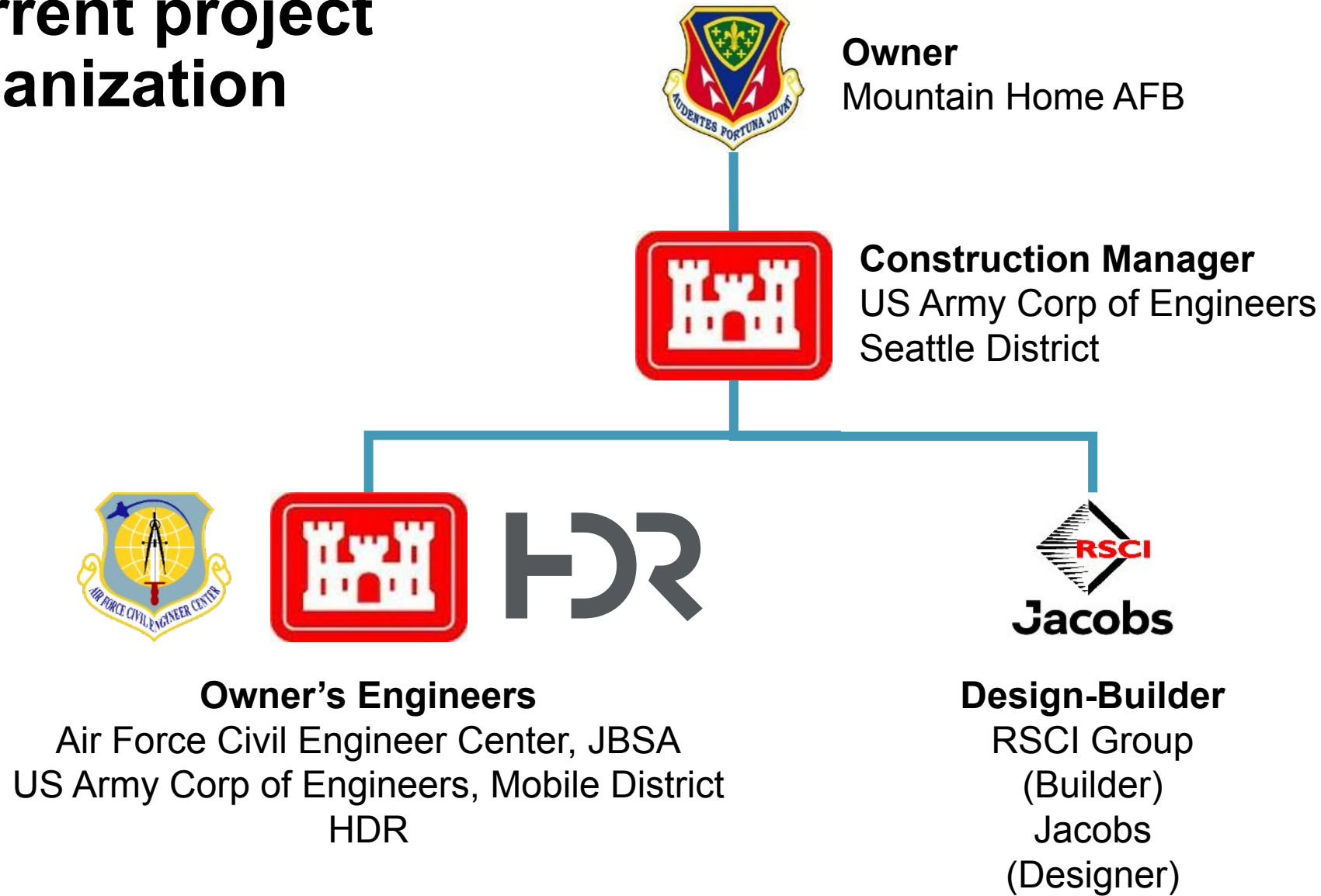


Source: 2020 Design Charrette



Current situation

Current project organization



Activities in the last six years

- **2020:** water supply selection and initial budgeting completed
- **2021:** Congressional funding authorized
- **2022:** conceptual design starts, corrosion control study completed
- **2023:** facility plan completed, design/build RFP is issued
- **2024:** water quality sampling completed, IDEQ treatment requirements finalized, RSCI / Jacobs hired as design-builder, construction breaks ground
- **2025:** lots of design, lots of construction....



Nov. 2024 – Digging into rock



Jan. 2025 – Site piping going in



Feb. 2025 – Building slab being poured, clearwells going up



March 2025 – Almost all raw water tank metal welded on



**April 2025 – Buried electrical
going in**



Construction well underway

- Major concrete work is nearly complete
- Building erection about to start
- Finalizing process design packages
- RSCI / Jacobs racing towards August 2026 start-up



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