

Salt Flat Report for NASA - 41 Alternative Sites

A catalogue of remote salt flats greater than 5 square miles,
mostly located in Nevada

Vincent Ramirez
Geologist

May, 2021

salt flat

- n.

A dry lake bed consisting primarily of salt.

- n.

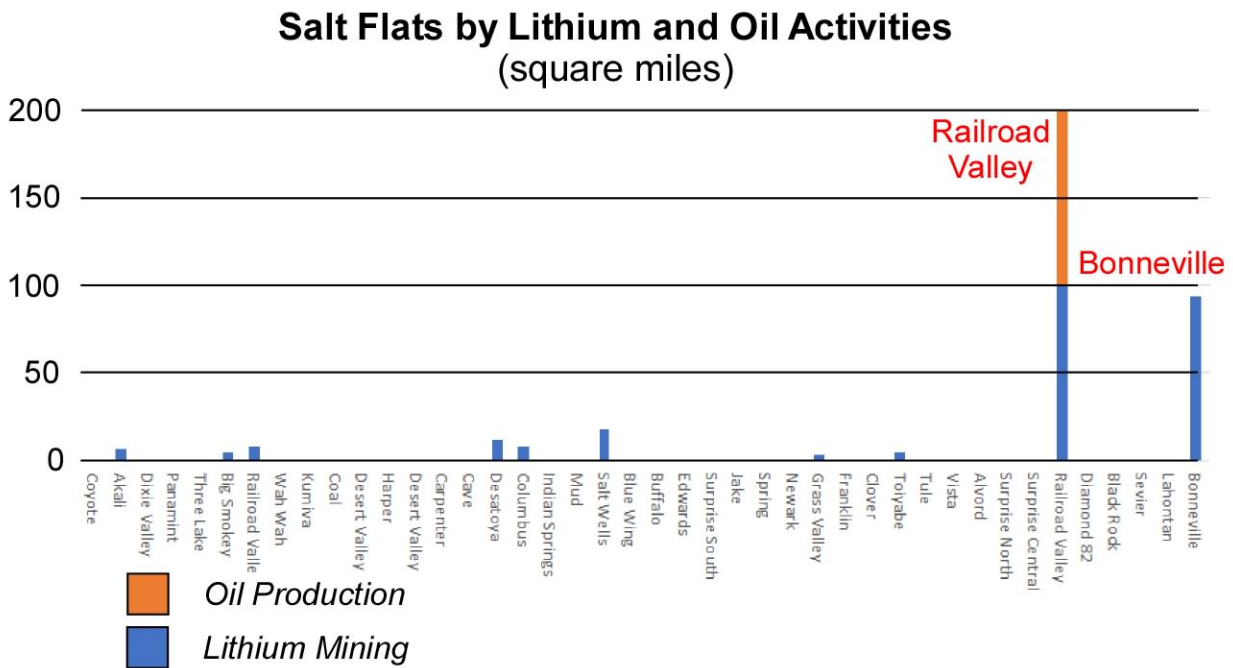
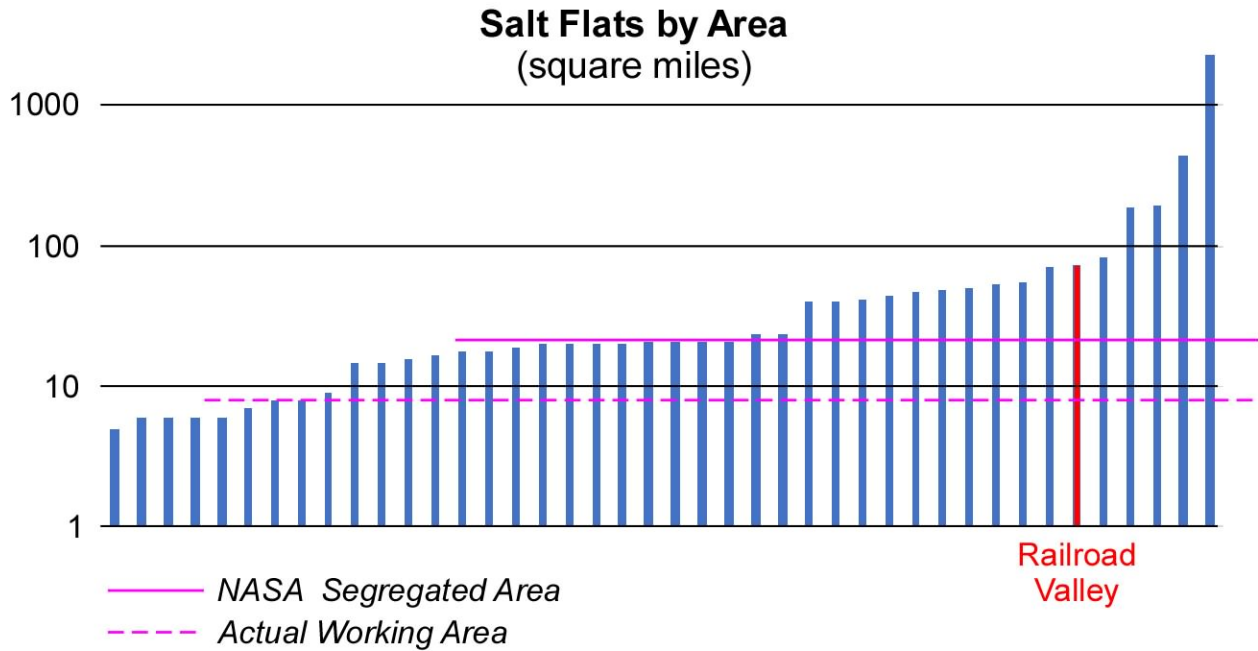
a flat expanse of salt left by the evaporation of a body of salt water

Lithium is found in salt flats, or more properly, in the salty fluids buried beneath these evaporite salt bodies. In order to capture lithium, these salt bodies must also be of a particular chemistry (Na > K > Ca), and in an area of particular volcanic rocks, known as rhyolites. If these conditions are met, AND there were long periods when evaporation was greater than precipitation, then high concentrations of lithium are likely.

These conditions are met only in the high Andes of South America, the Tibet Plateau, parts of China, and the Great Basin of the western USA.

Not every salt flat has lithium, because the salt fluid must remain trapped and not have been diluted. However, some salt flats definitely have lithium, and the few large places that do will eventually supply the clean-energy revolution of electric cars now anticipated. A domestic supply of lithium for America will probably come from Nevada.

This document is a compendium of the larger salt flats in the Great Basin.



Top: Salt flats in the Great Basin, shown by area. Most are large enough for NASA purpose.

Bottom: Lithium mining and oil production on salt flats in the Great Basin. The NASA segregation has targeted the only area in Nevada with meaningful activity.

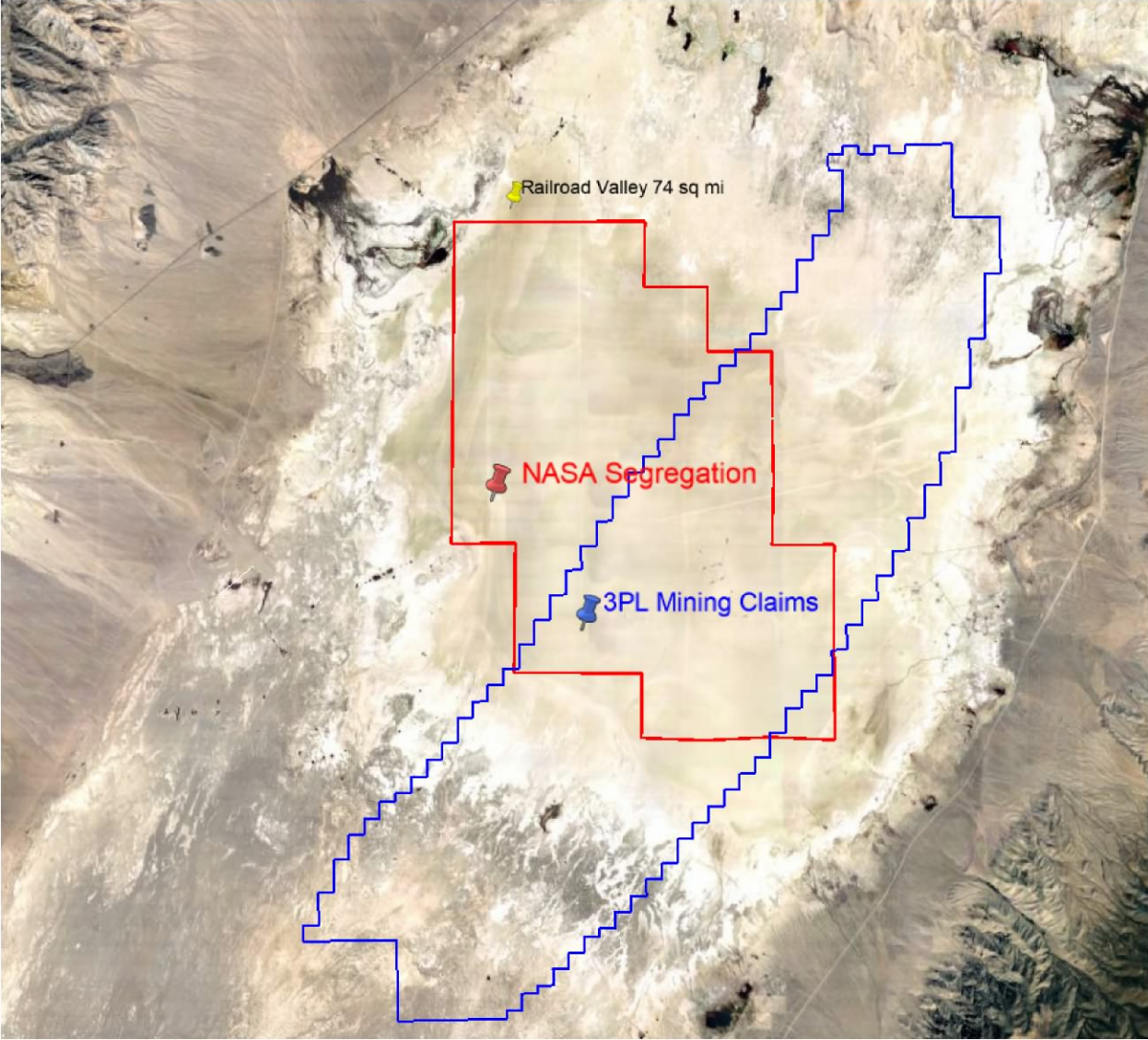
INTRODUCTION

On March 29, 2021 the Bureau of Land Management segregated 23,000 acres of Railroad Valley from public use so that NASA may expand their satellite reflection studies. According to NASA, the Railroad Valley location is the only suitable location for this research.

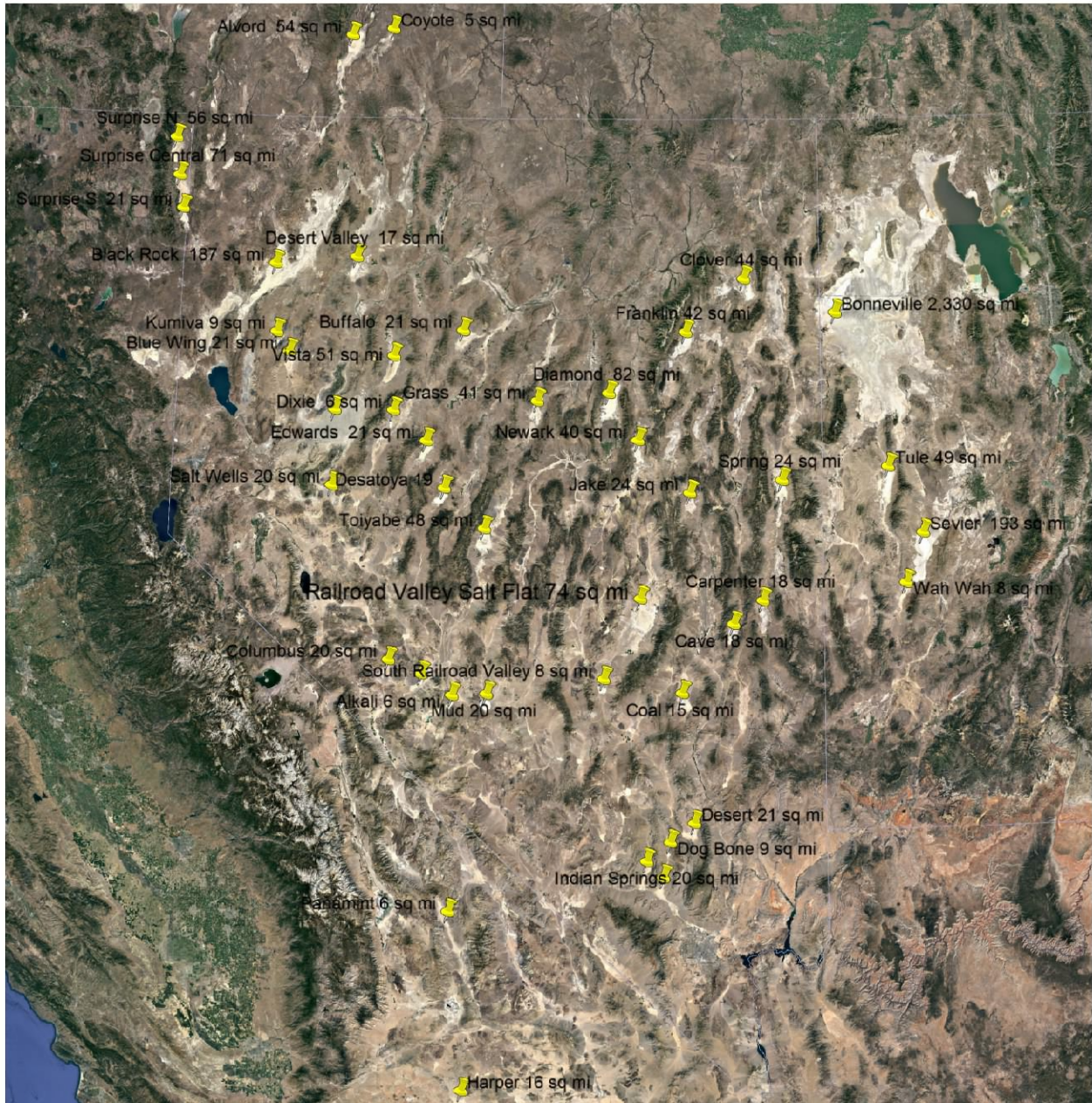
Forty-two salt flats in the Great Basin are large enough to suit NASA's needs. There are other considerations, of course, but Railroad Valley is also unique because it has significant lithium mining activity and oil production. The other 41 salt flat locations have virtually no lithium mining or oil and gas production. Railroad Valley has more than 100 square miles dedicated to lithium mining activities from several companies. Oil production is of similar size.

The NASA segregation will seriously impact these activities for at least 22 years.

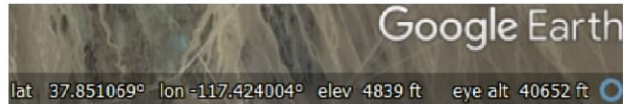
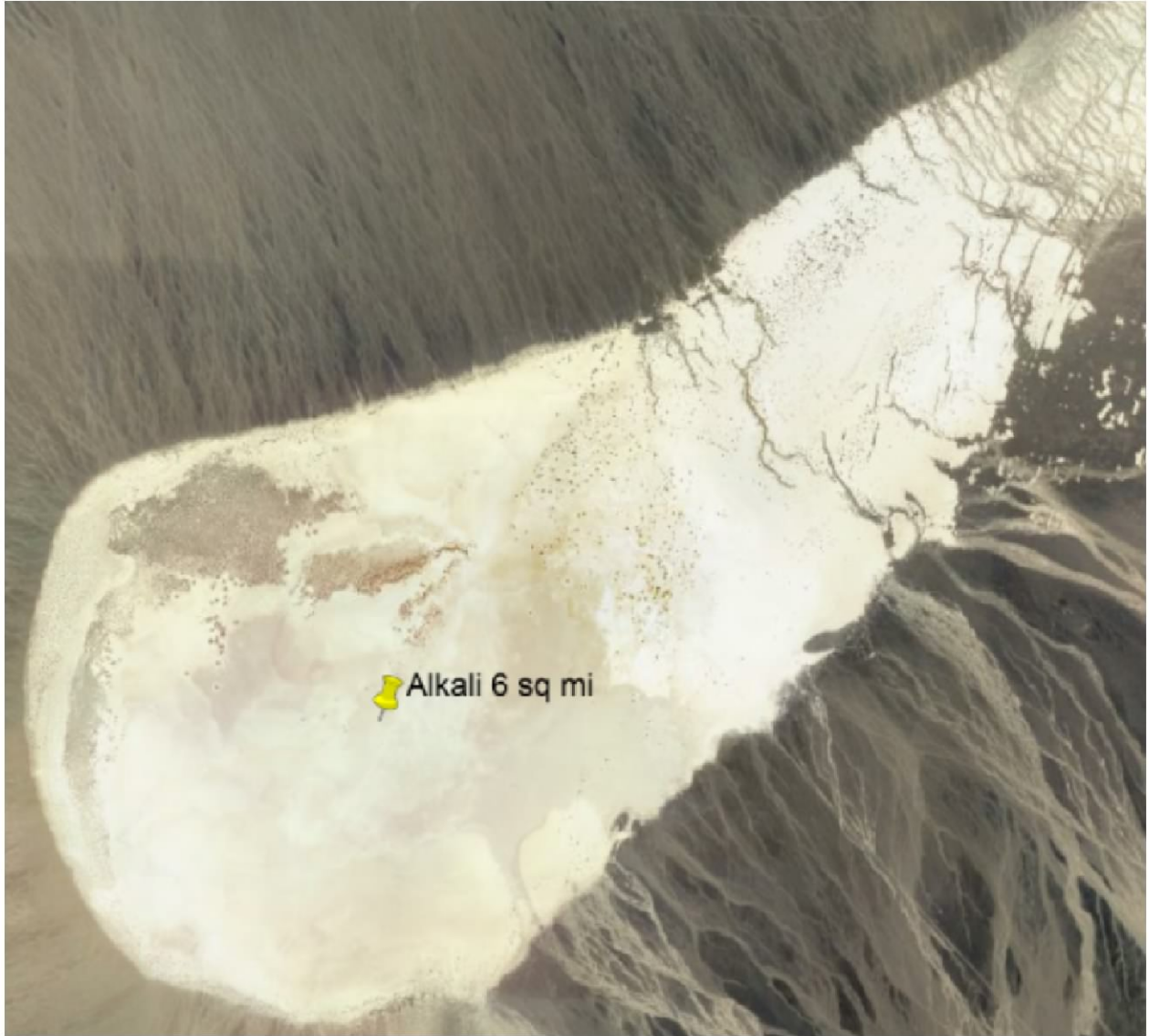
We offer that there really is nothing unique at the surface of Railroad Valley for NASA, and they could just as well move to a similar area and cause far less impact. Ironically, as lithium exploration develops into production, human impact in Railroad Valley will make it undesirable for NASA.



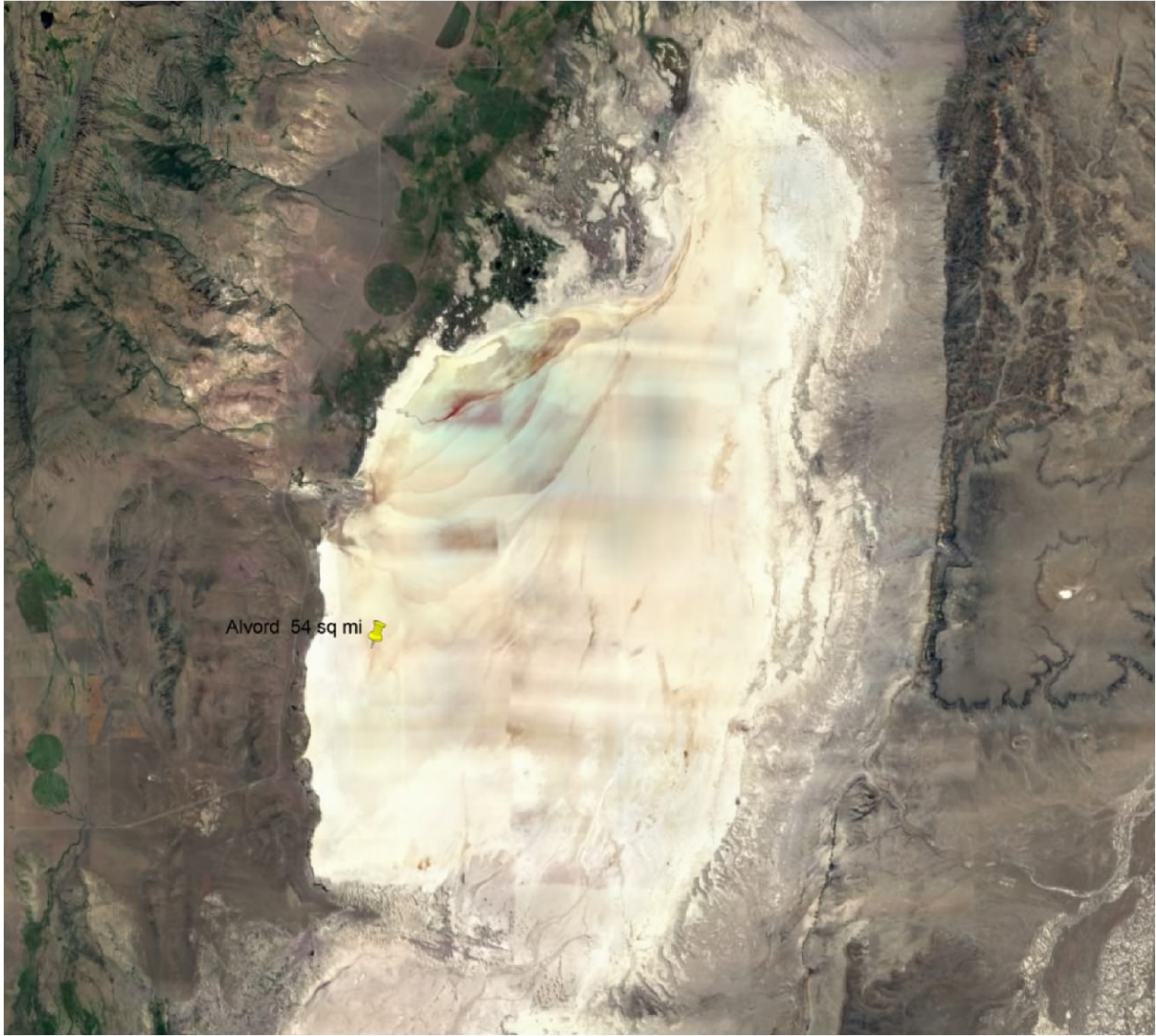
Railroad Valley Salt Flat



Forty-two salt flats exist in the Great Basin area, and these range in size from 6 to 2,330 square miles. A Google Earth image of each salt flat is shown in the following pages. Color variations are affected by the imagery, as well as the surface area.

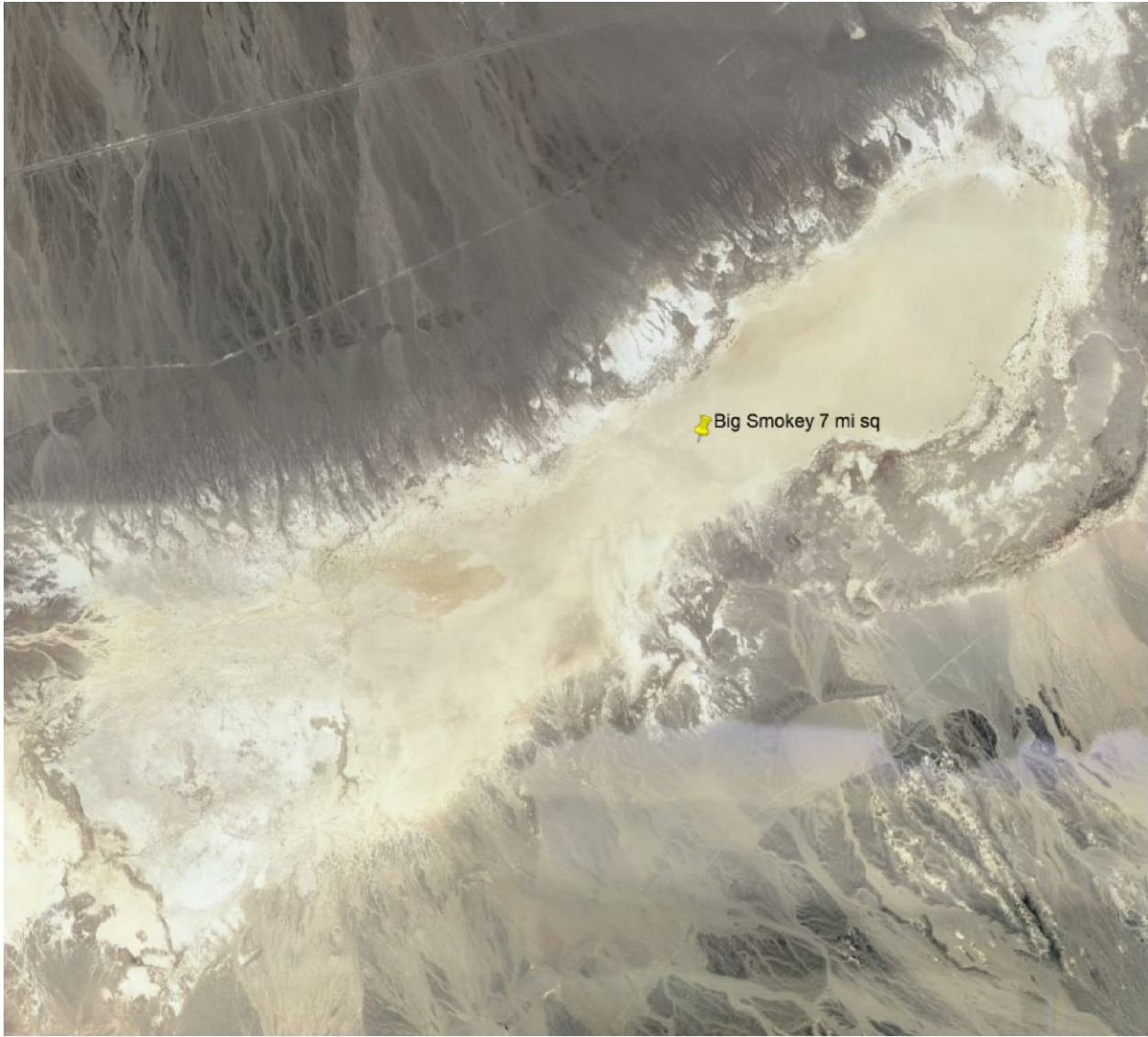


Alkali Salt Flat



Imagery Date: 7/15/2015 lat 42.512805° lon -118.603866° elev 4326 ft eye alt 23.84 mi

Alvord Salt Flat



Big Smokey Salt Flat:lat



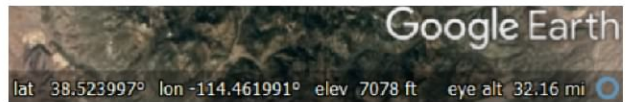
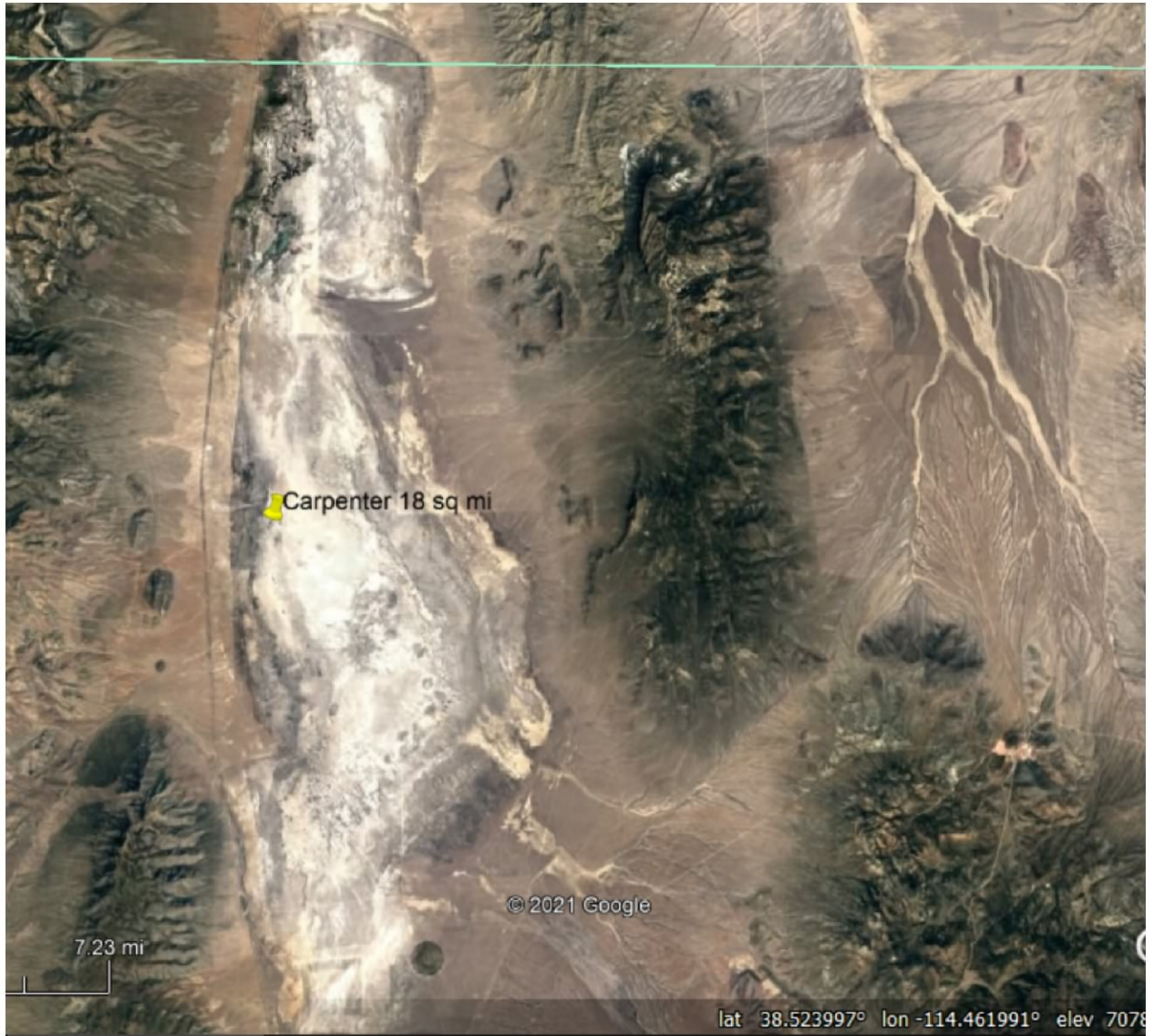
Blue Wing Salt Flat



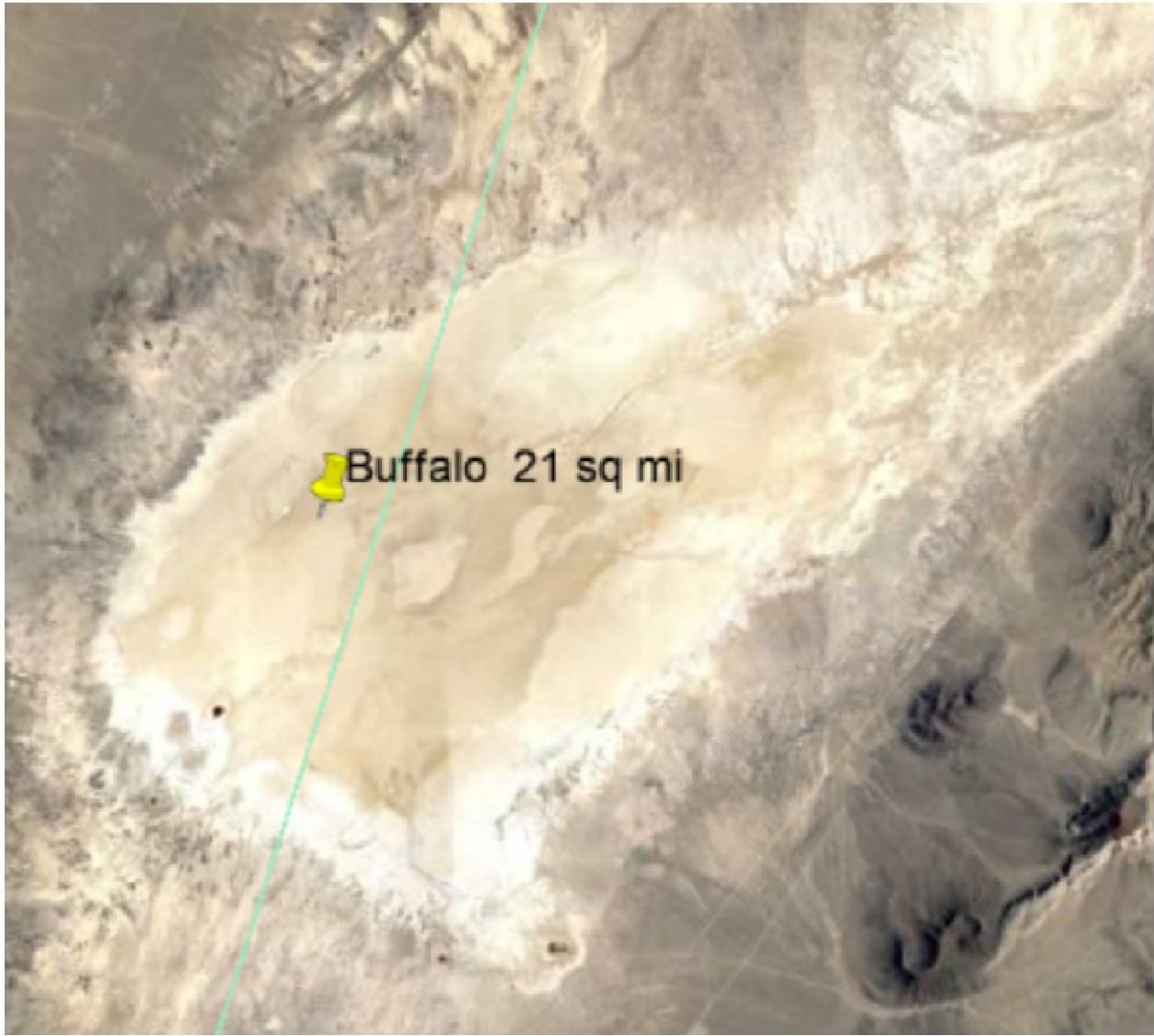
© 2021 Google



Bonneville Salt Flat



Carpenter Salt Flat



Buffalo Salt Flat



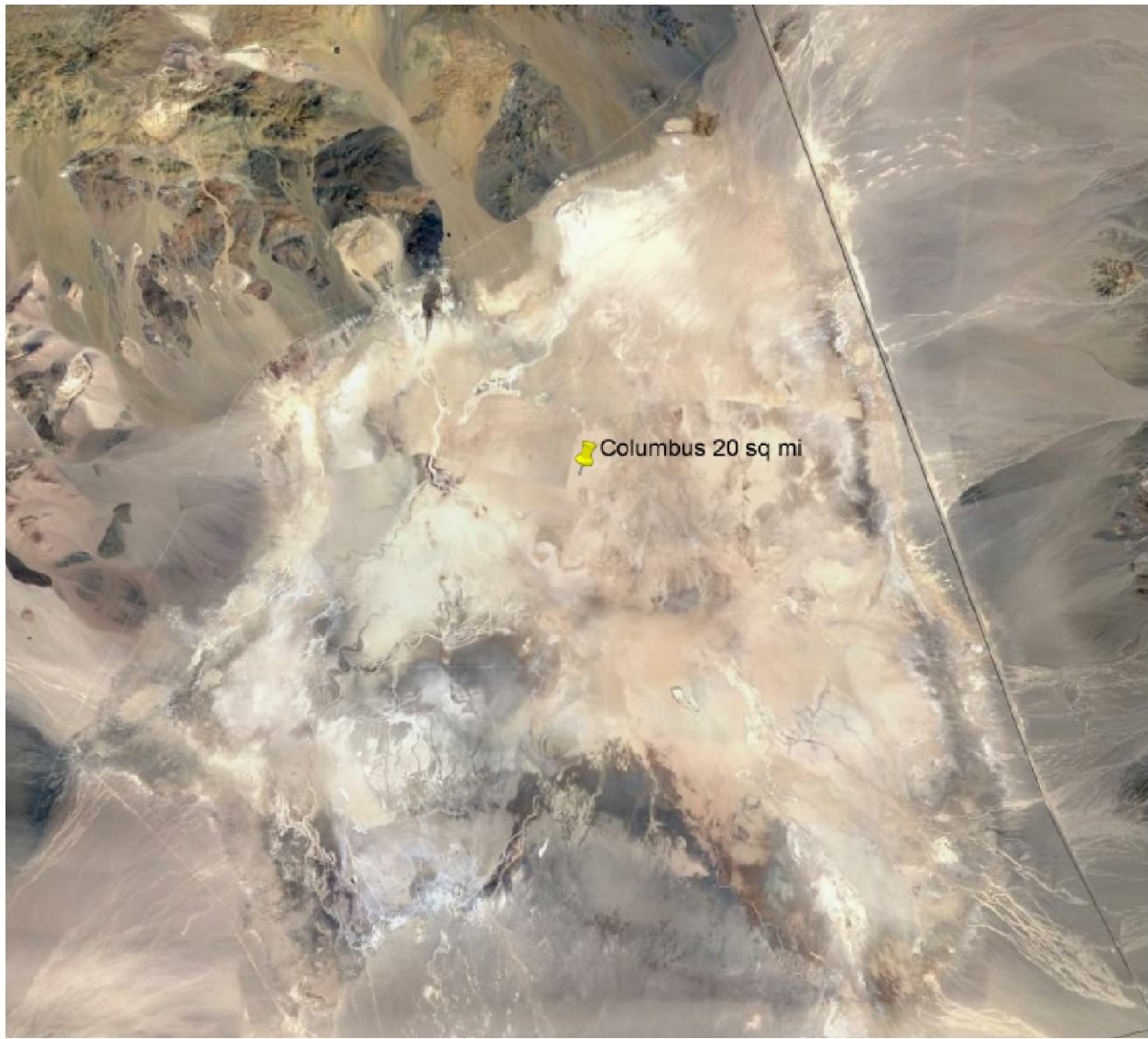
Cave Salt Flat



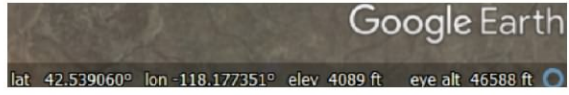
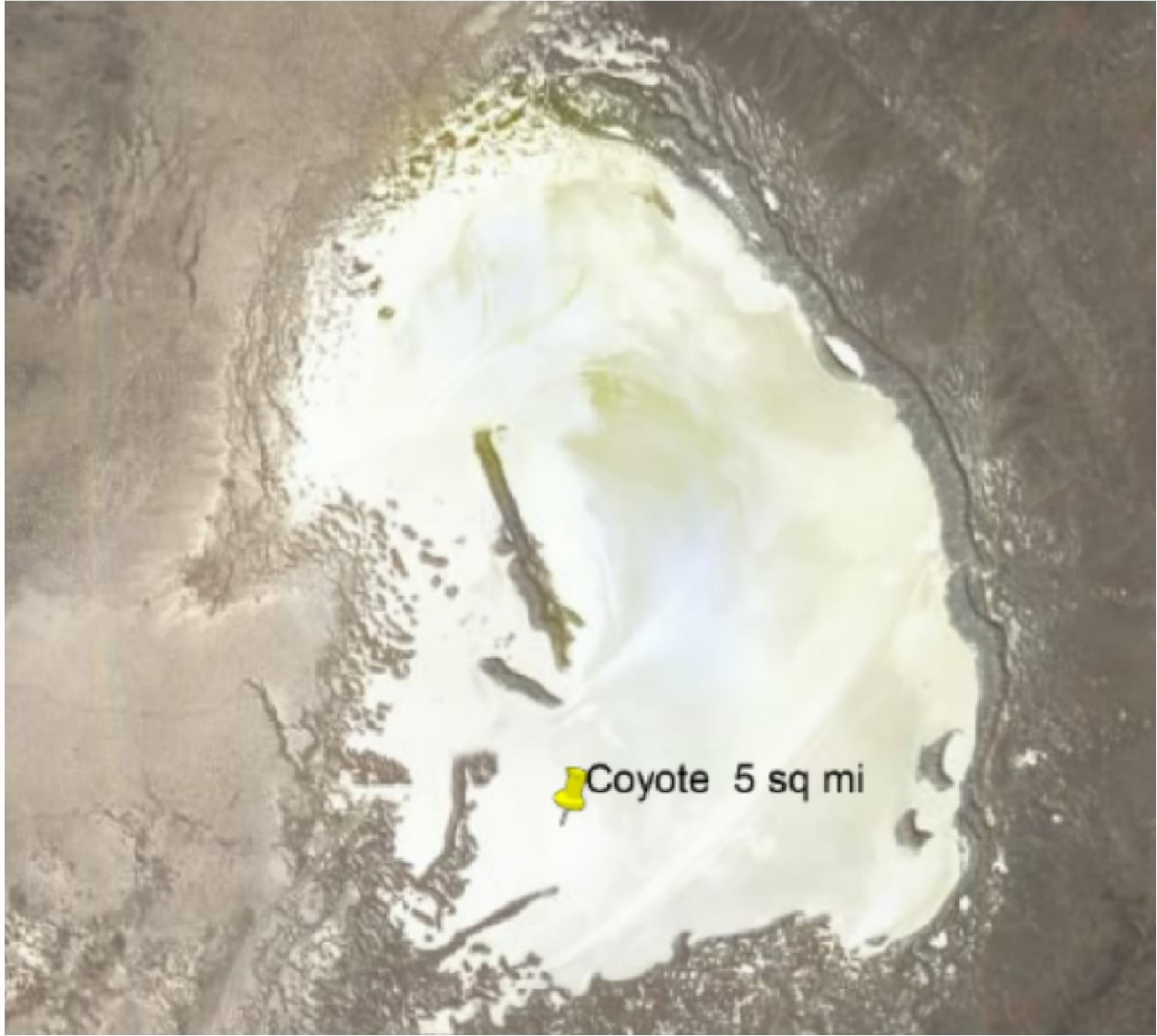
Clover Salt Flat



Coal Salt Flat



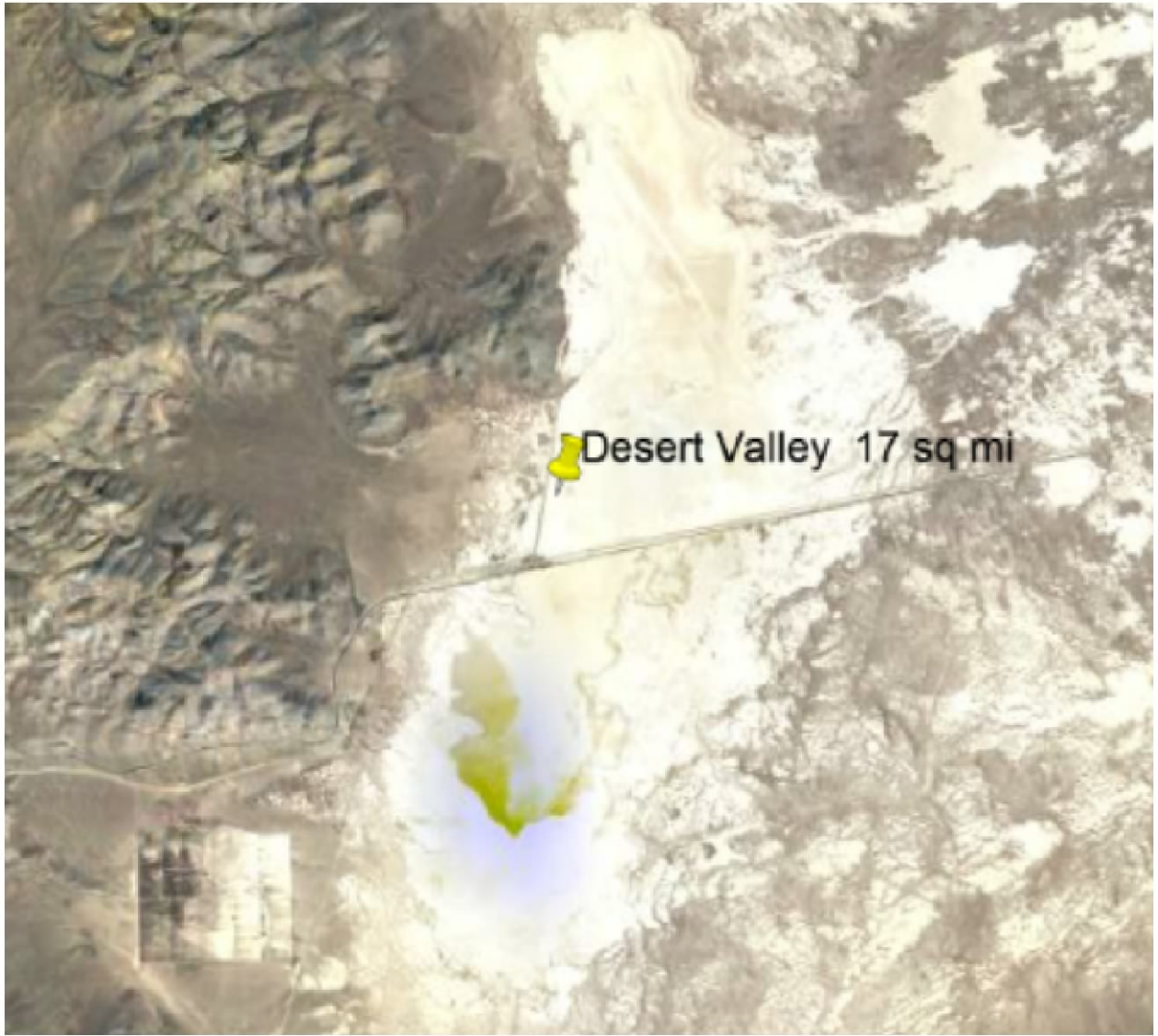
Columbus Marsh Salt Flat



Coyote Salt Flat



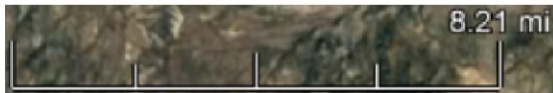
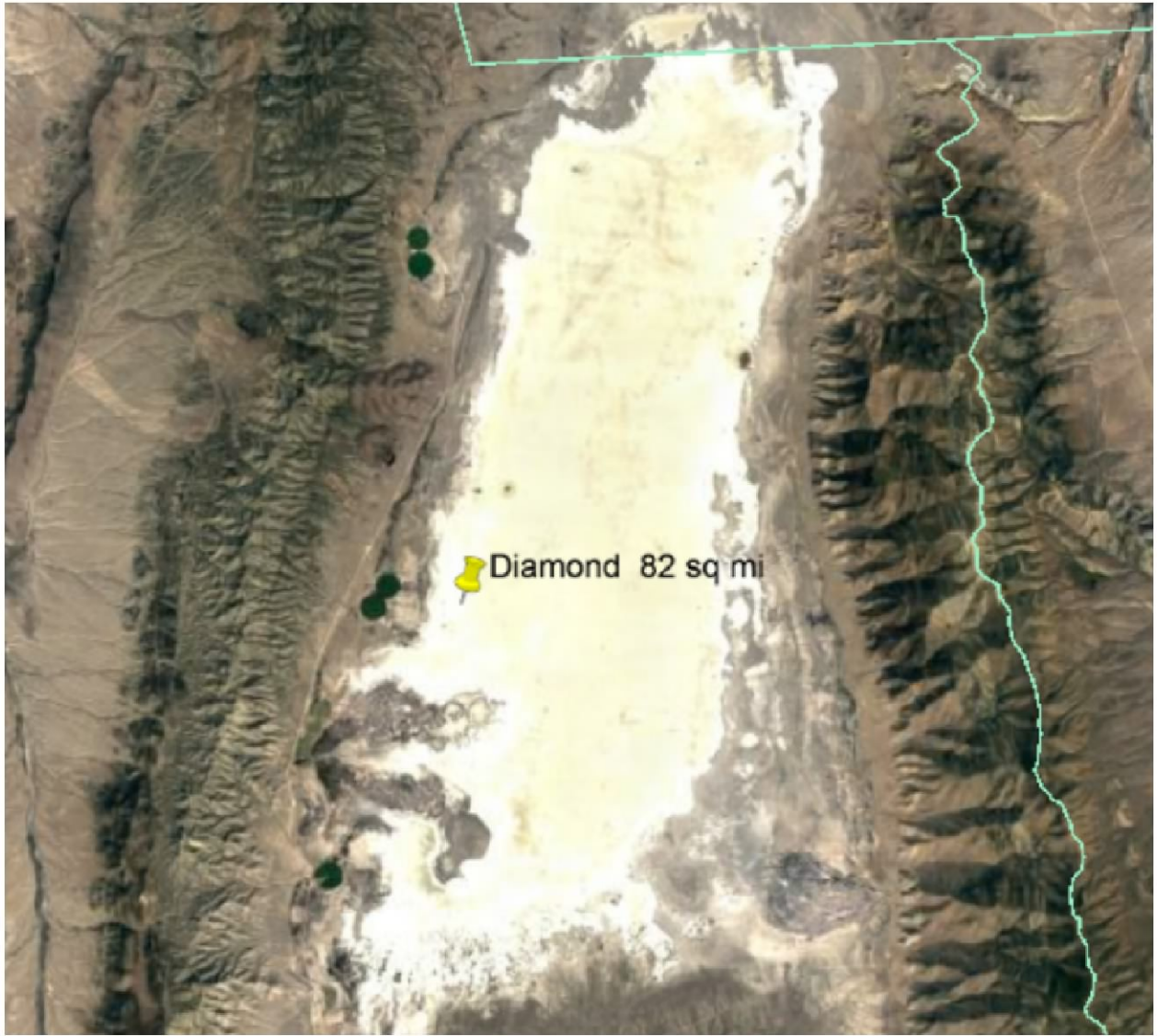
Desatoya Salt Flat



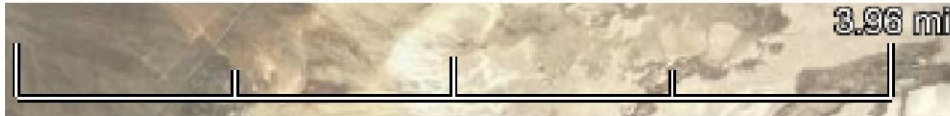
Desert Valley Salt Flat



Desert Salt Flat



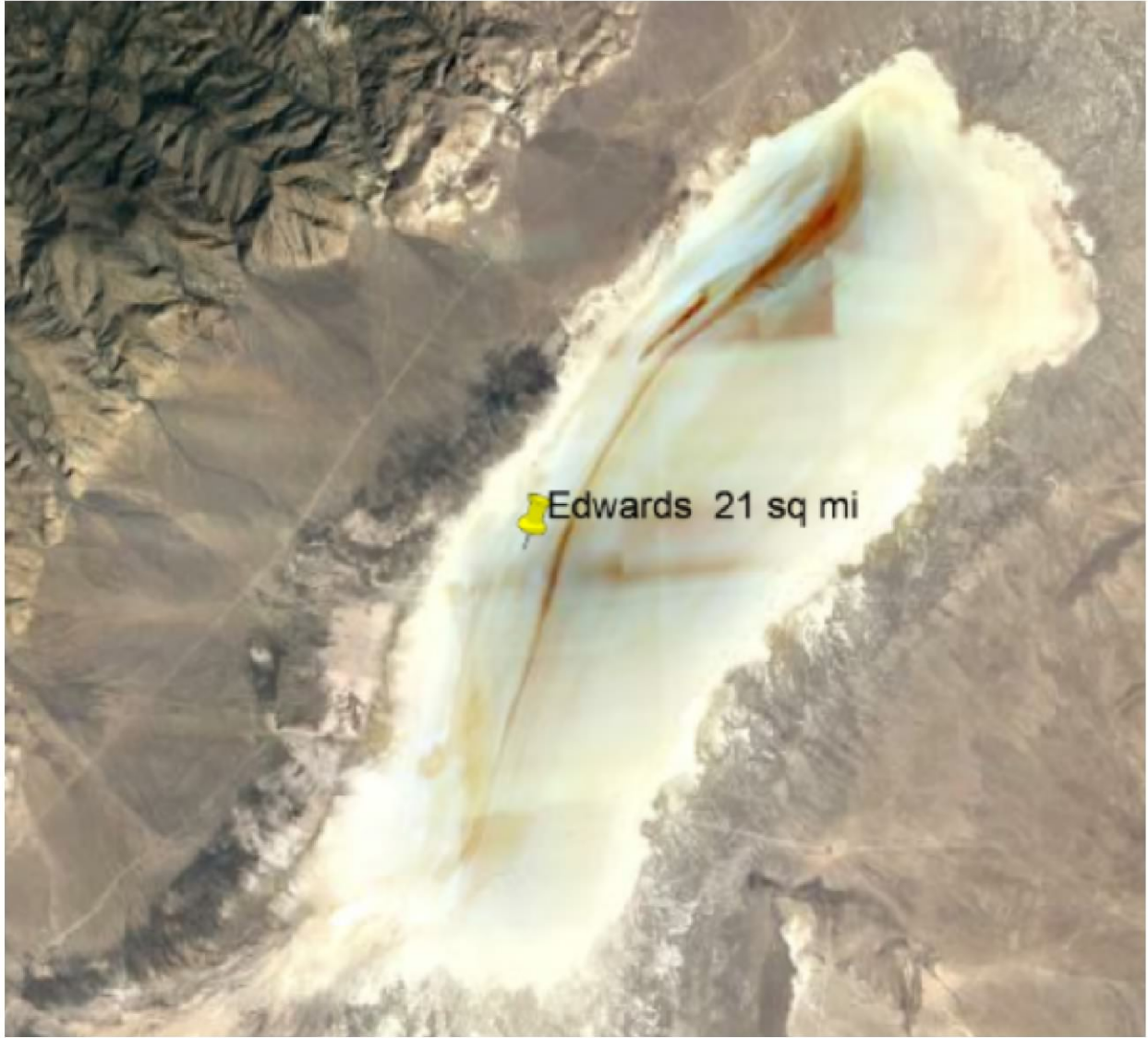
Diamond Valley Salt Flat



Dixie Salt Flat



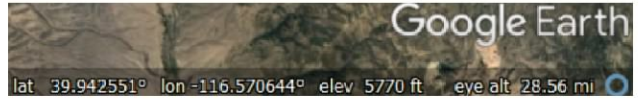
Dog Bone Salt Flat



Edwards Salt Flat



Franklin Lake Salt Flat



Grass Valley Salt Flat



Harper Salt Flat



Indian Springs Salt Flat



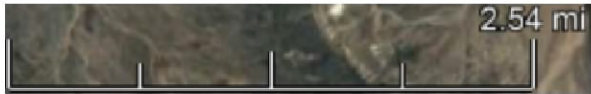
Jake Salt Flat



Kumiva Salt Flat



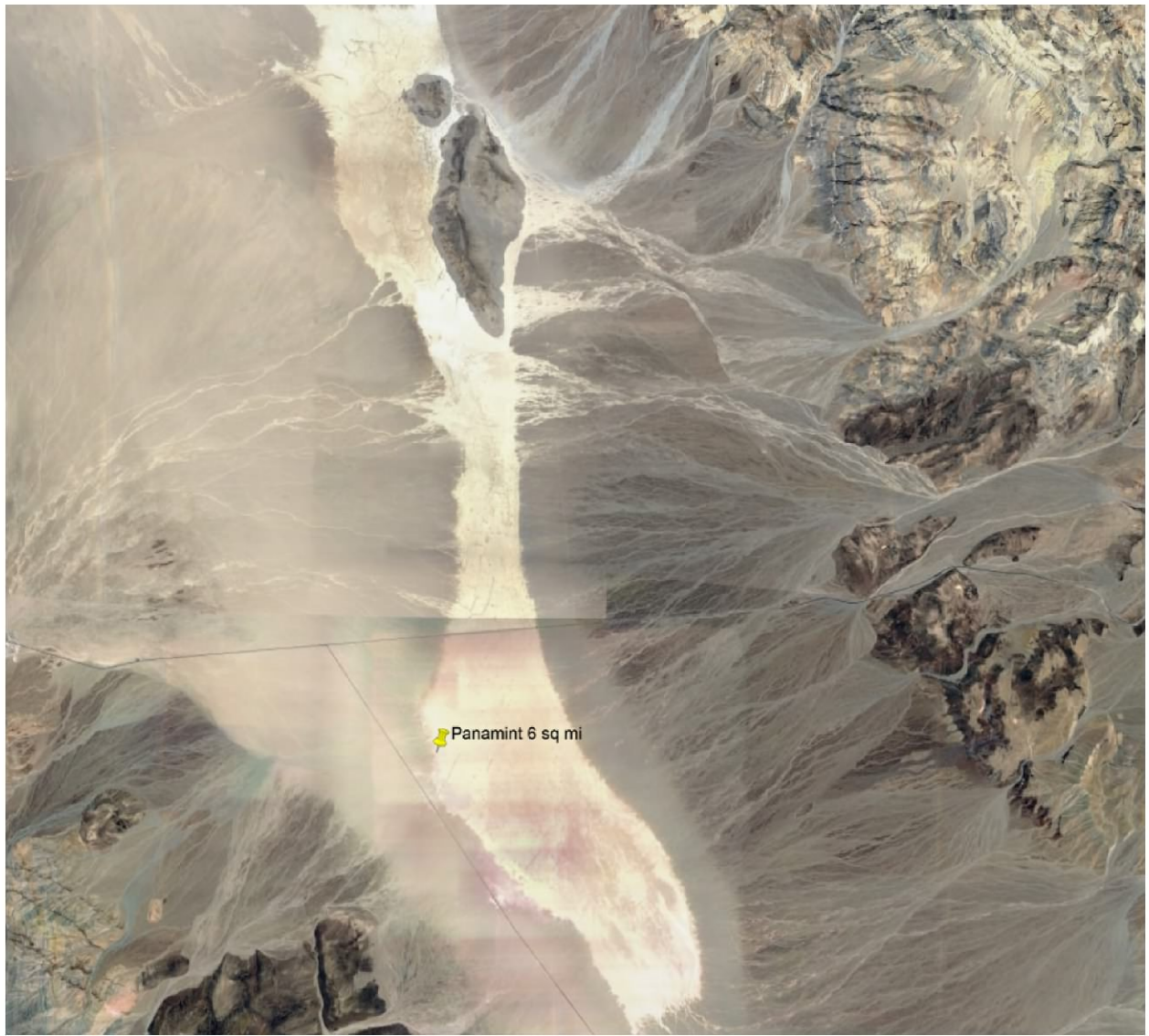
Lahontan Salt Flat



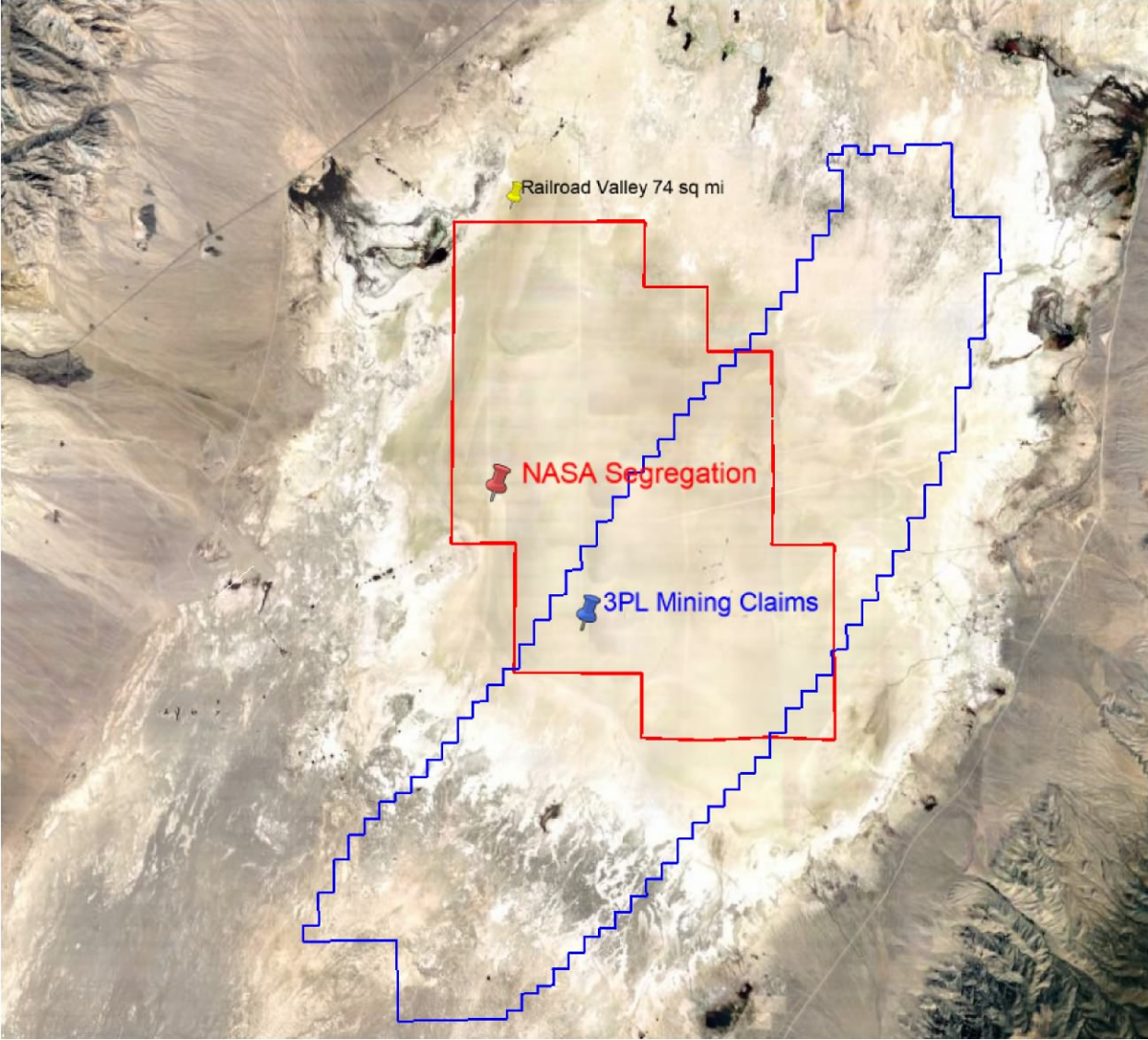
Mud Salt Flat



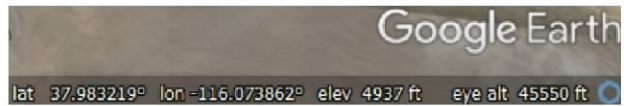
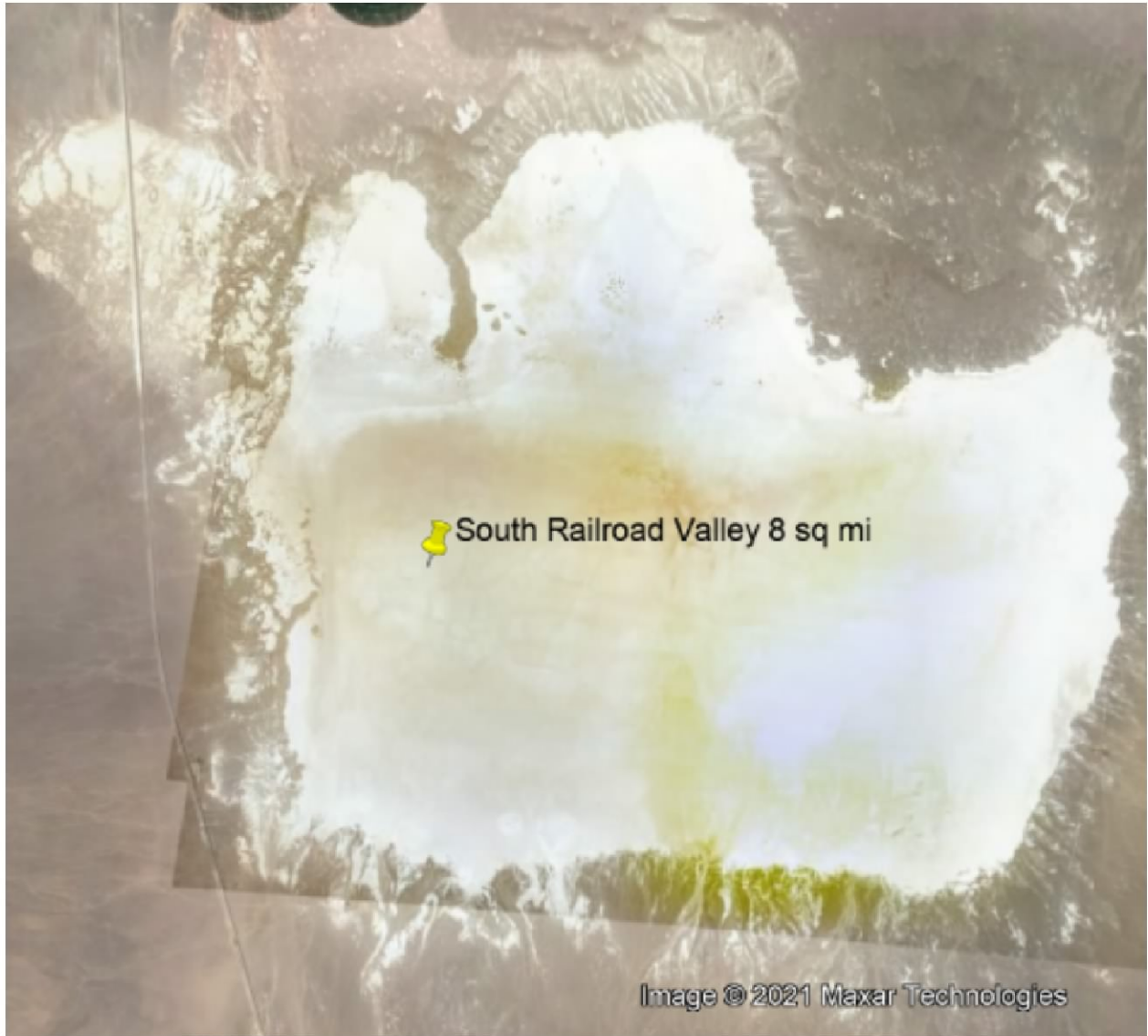
Newark Salt Flat



Panamint Salt Flat



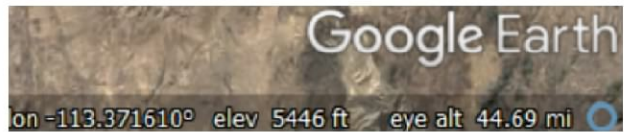
Railroad Valley Salt Flat



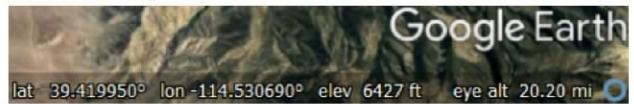
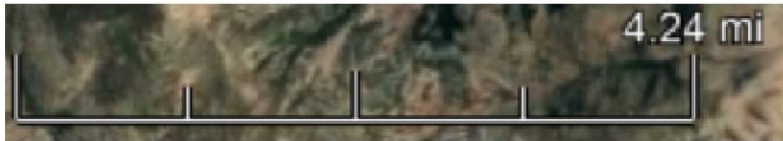
South Railroad Valley Salt Flat



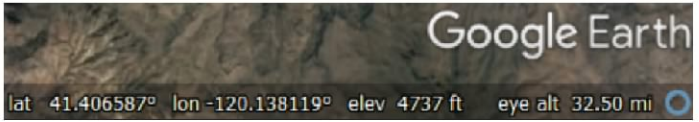
Salt Wells Salt Flat



Sevier Salt Flat



Spring Salt Flat



Surprise Central Salt Flat



Surprise North Salt Flat



Three Lake Salt Flat



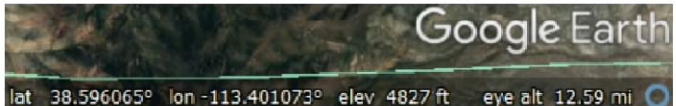
Toiyabe Salt Flat



Tule Salt Flat



Vista Salt Flat



Wah Wah Salt Flat