

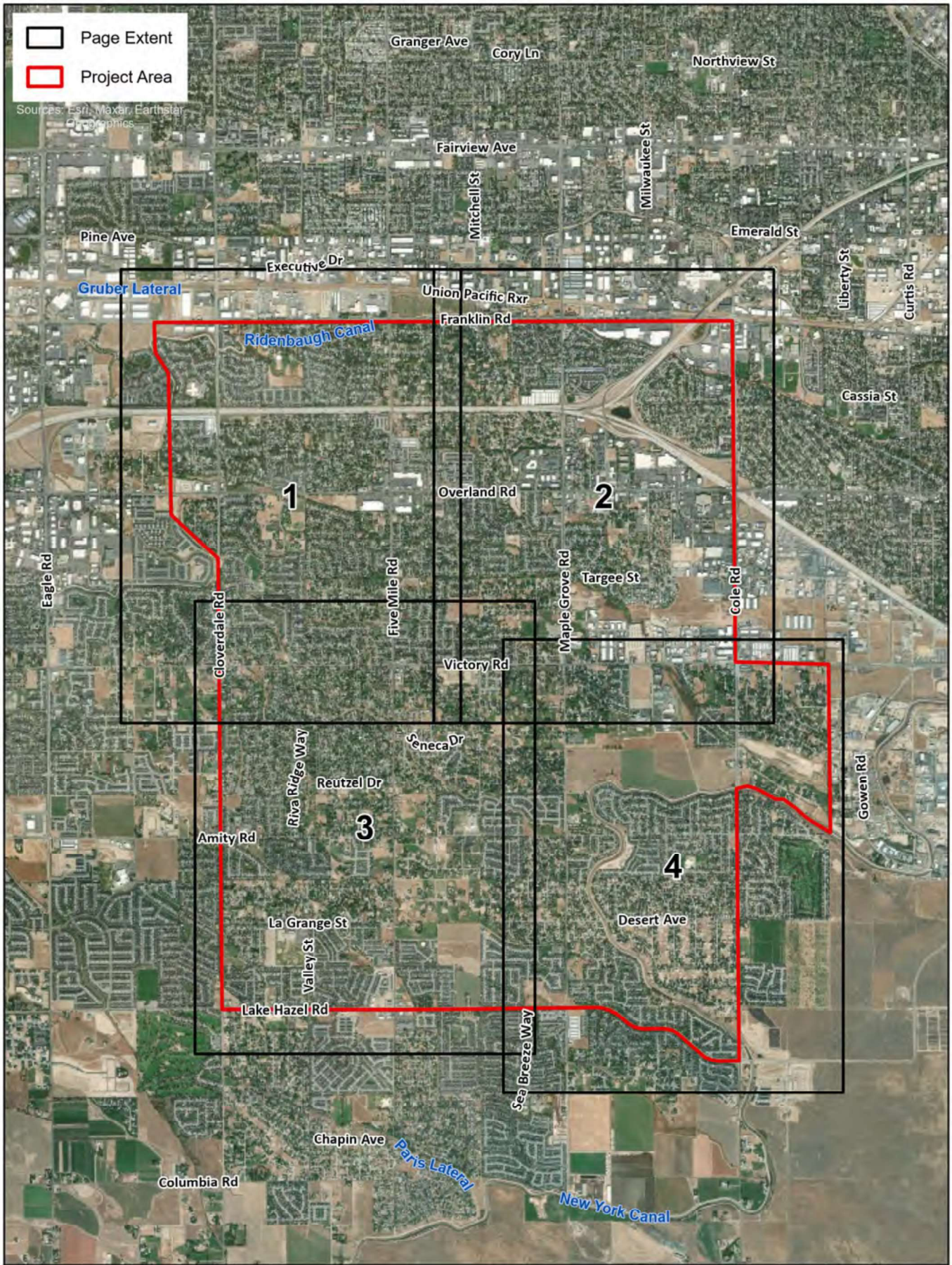
Esri, Maxar, Earthstar Geographics



0 0.5 mi

- Project Area (1)
 - Commercial (3)
 - Domestic (2048)
 - Irrigation (31)
 - Monitoring (89)
 - Municipal (32)
 - Other (32)
 - Unknown (250)
- *Use based on well log
WELLS WITHIN
PROJECT AREA: 2487

DATA OVERVIEW
WELL USE
Figure 3



Page Extent
 Project Area

Sources: Esri, Maxar, Earthstar, GeoGraphics

Gruber Lateral

Ridenbaugh Canal

1

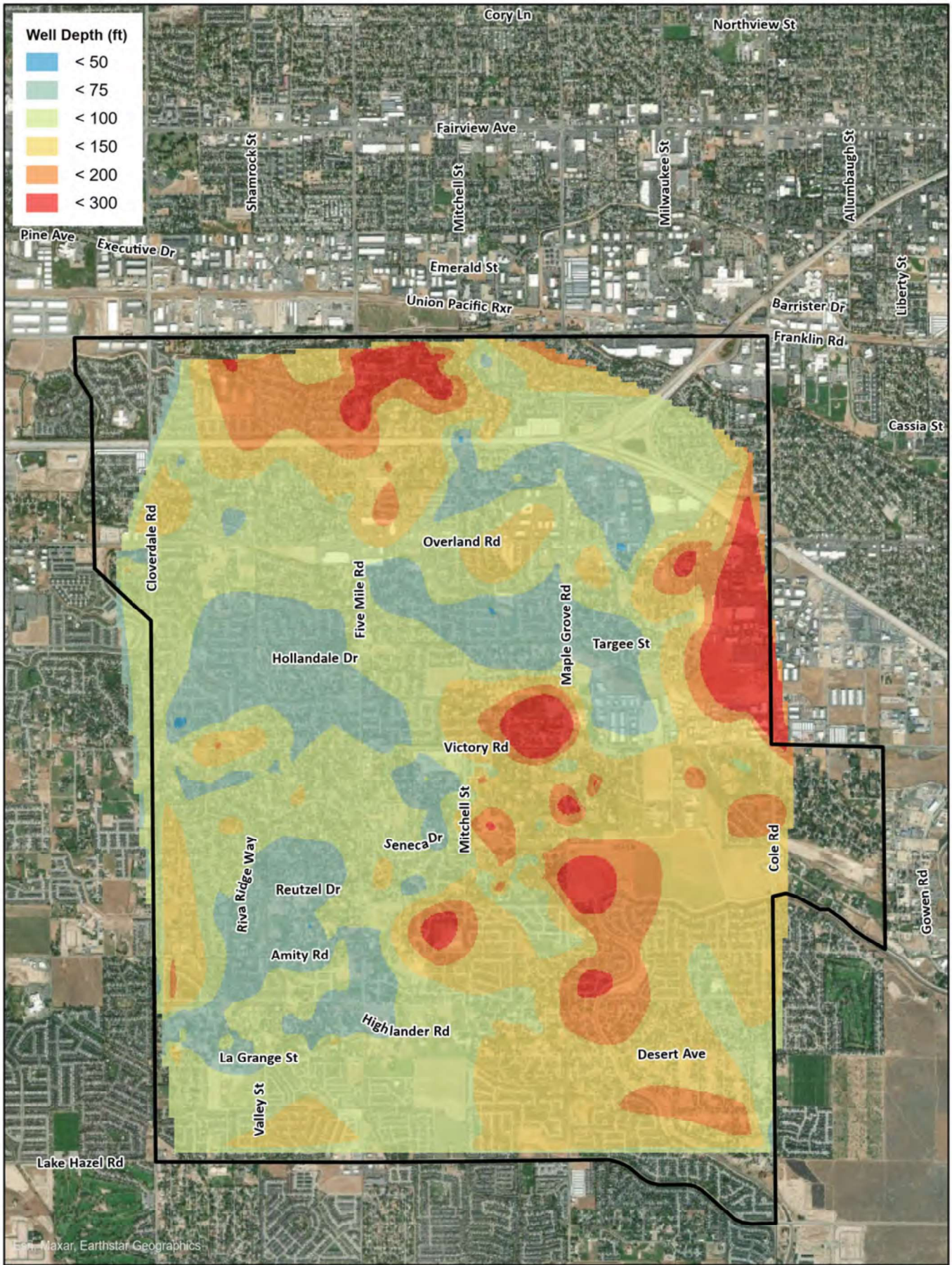
2

3

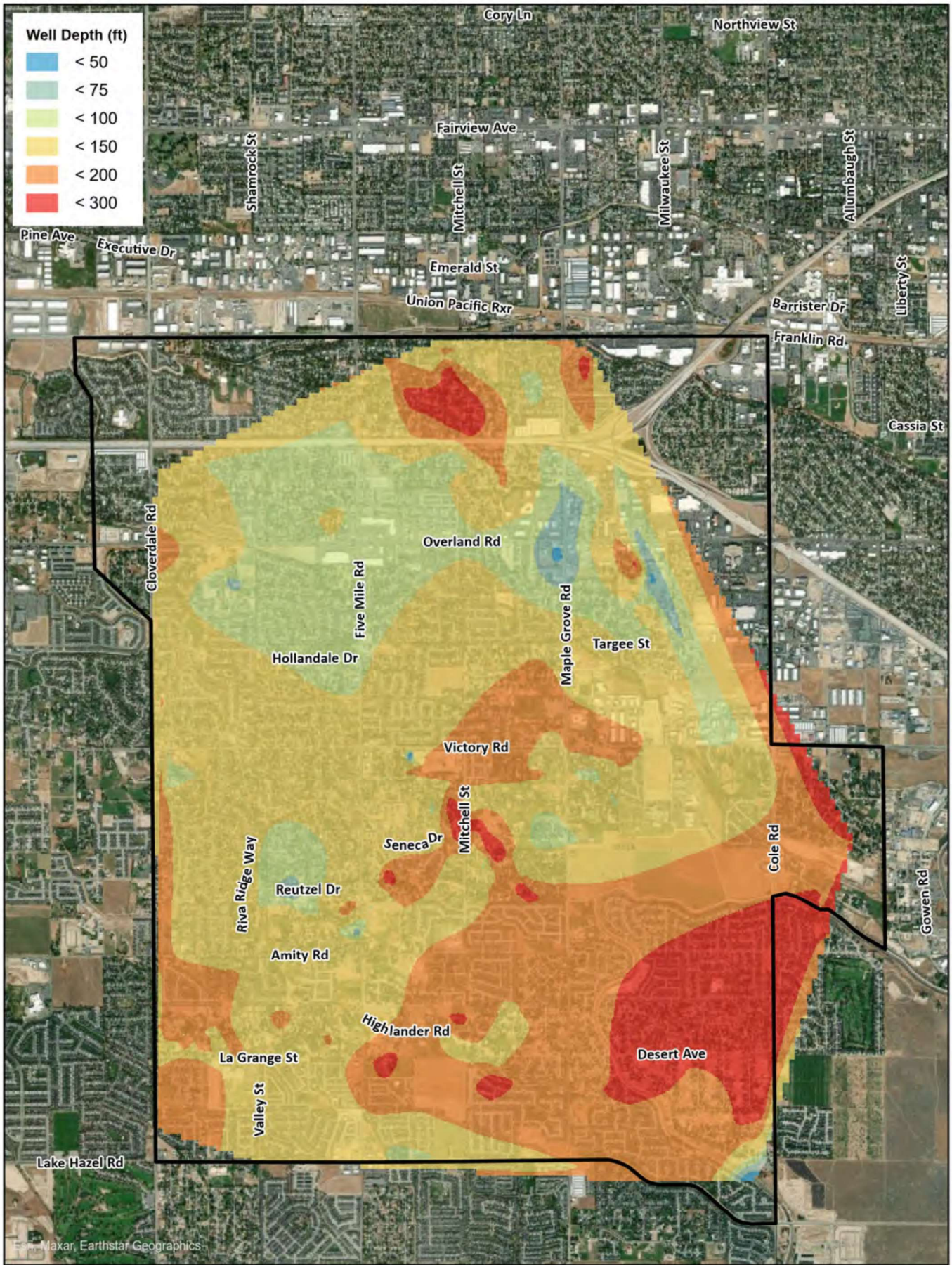
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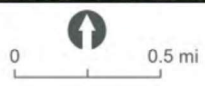
WELLS BY USE
Figure 4



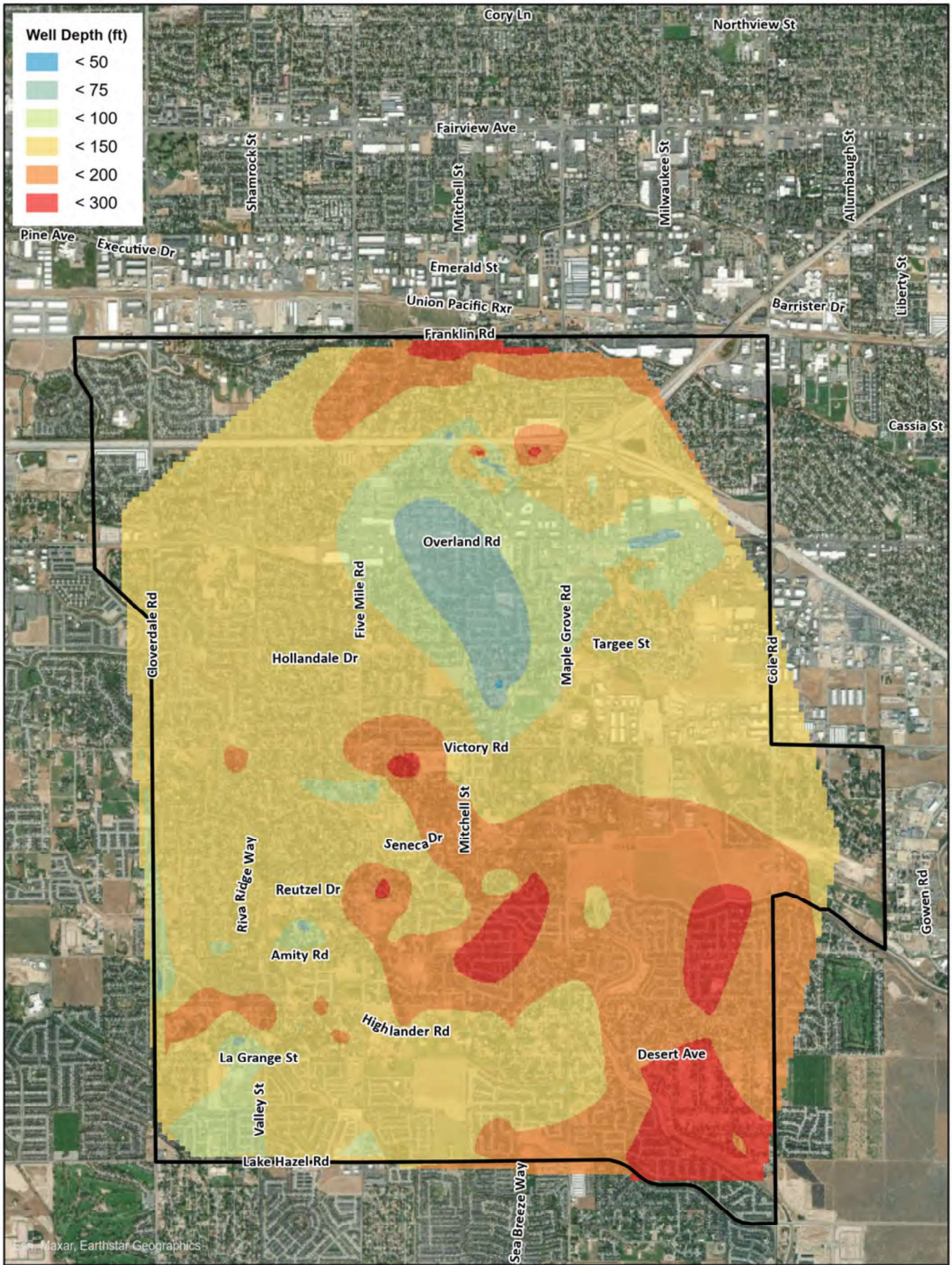
WELL DEPTH - 1970 TO 1979
Figure 7



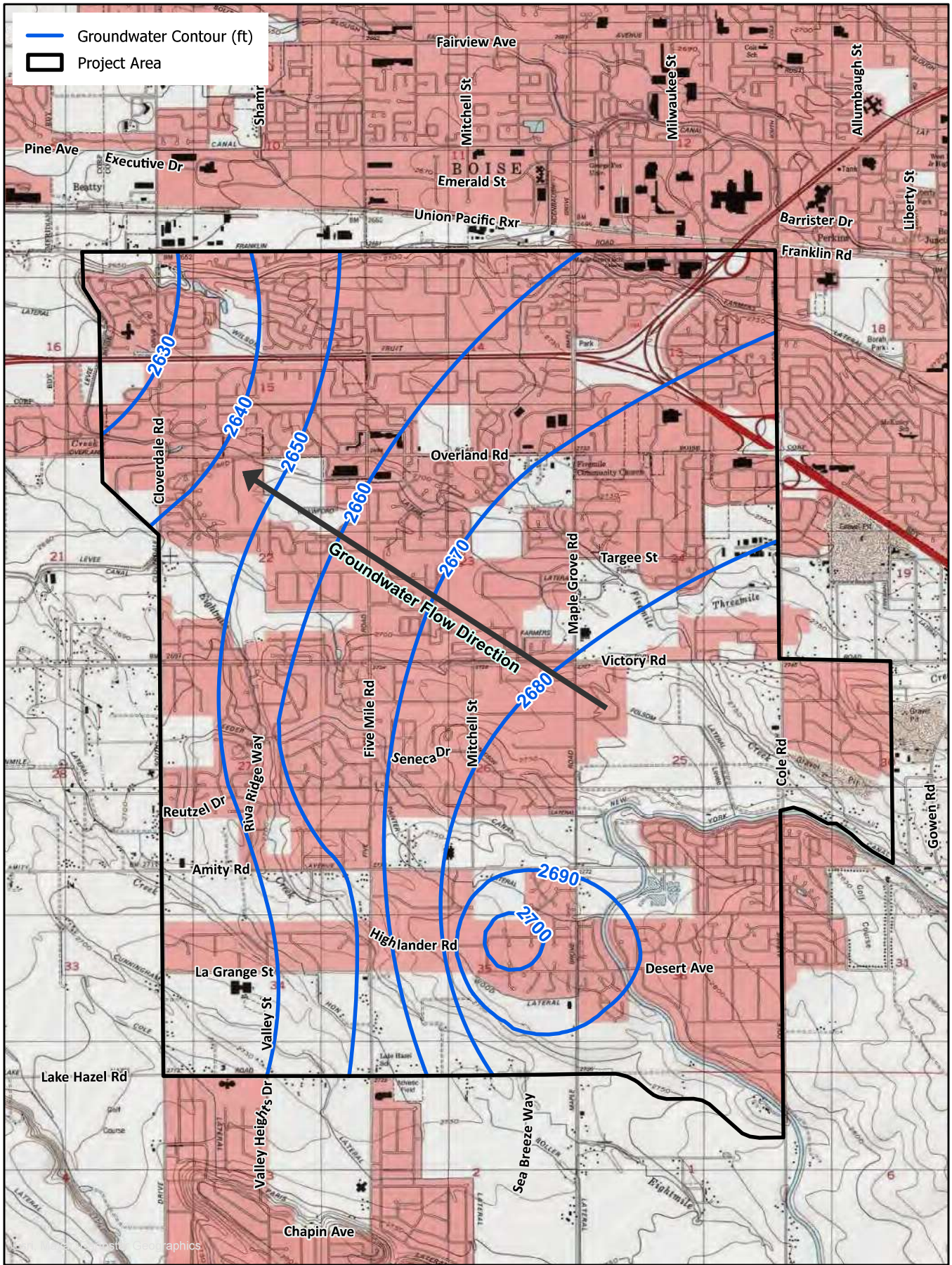
ESRI, Maxar, Earthstar Geographics



WELL DEPTH - 1990 TO 1999
Figure 8

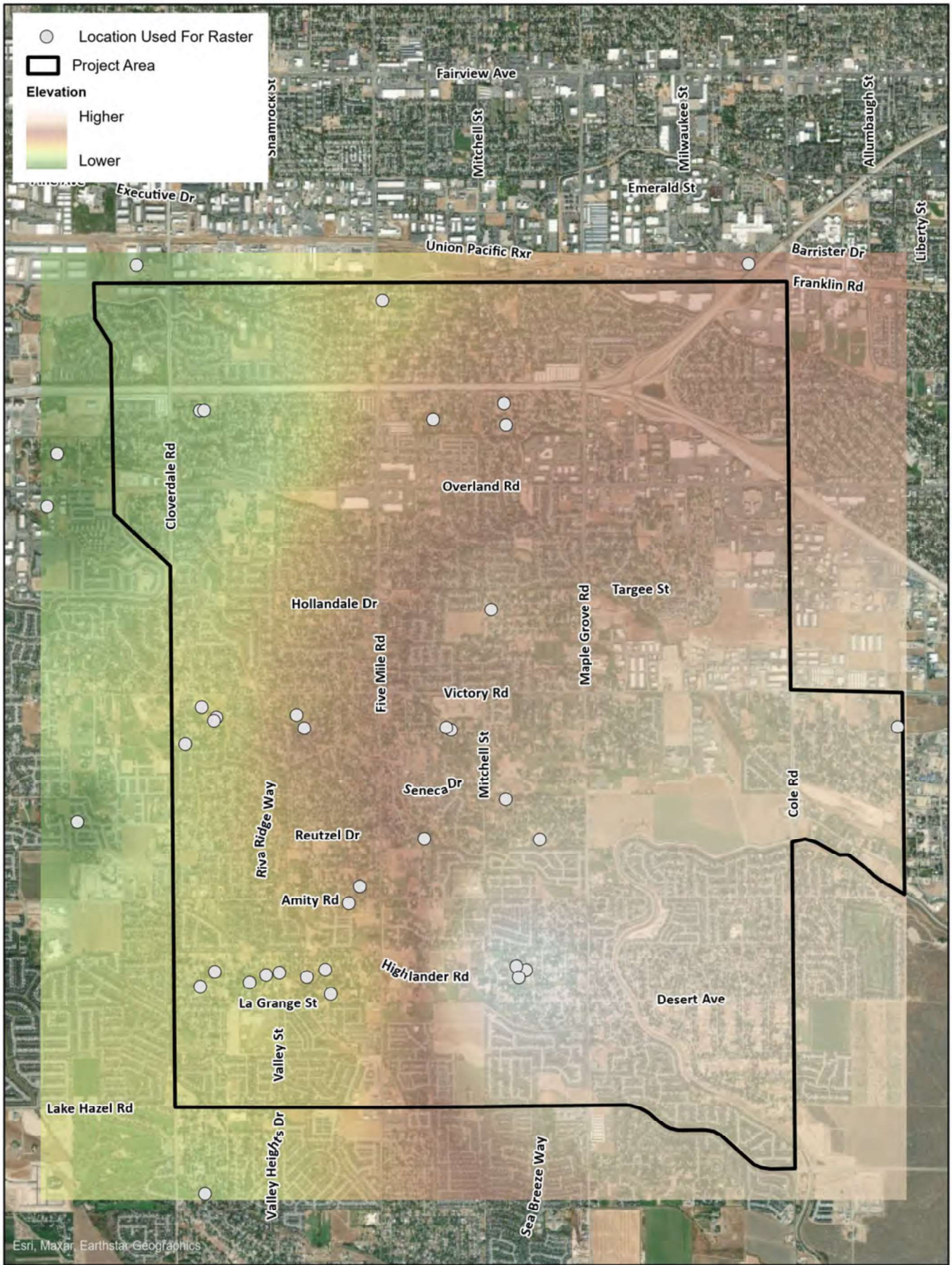


WELL DEPTH - 2000 TO 2009
Figure 9



2022 GROUNDWATER ELEVATION CONTOURS

Figure 10a

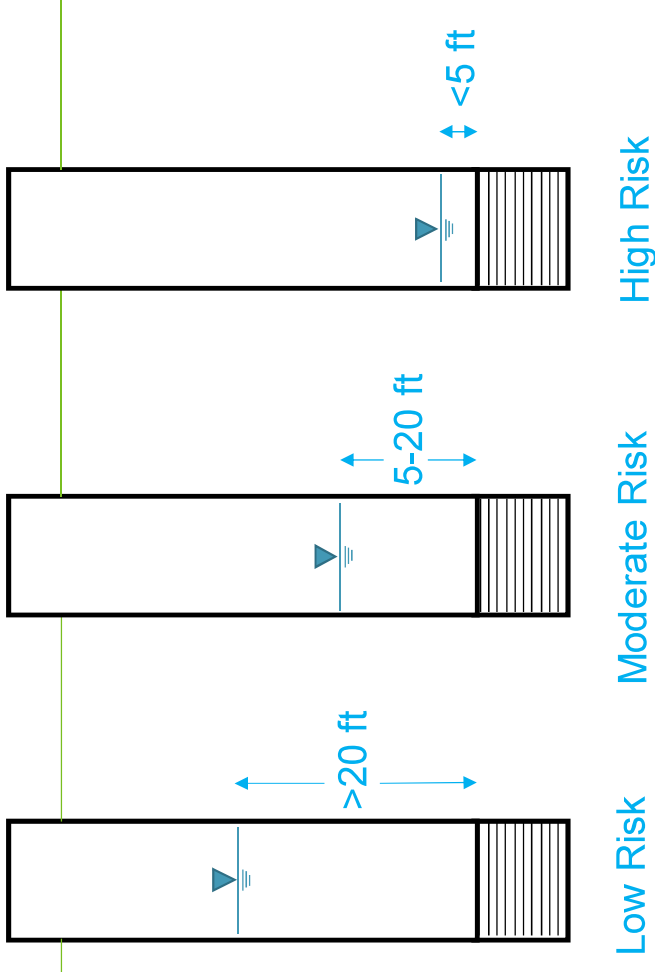


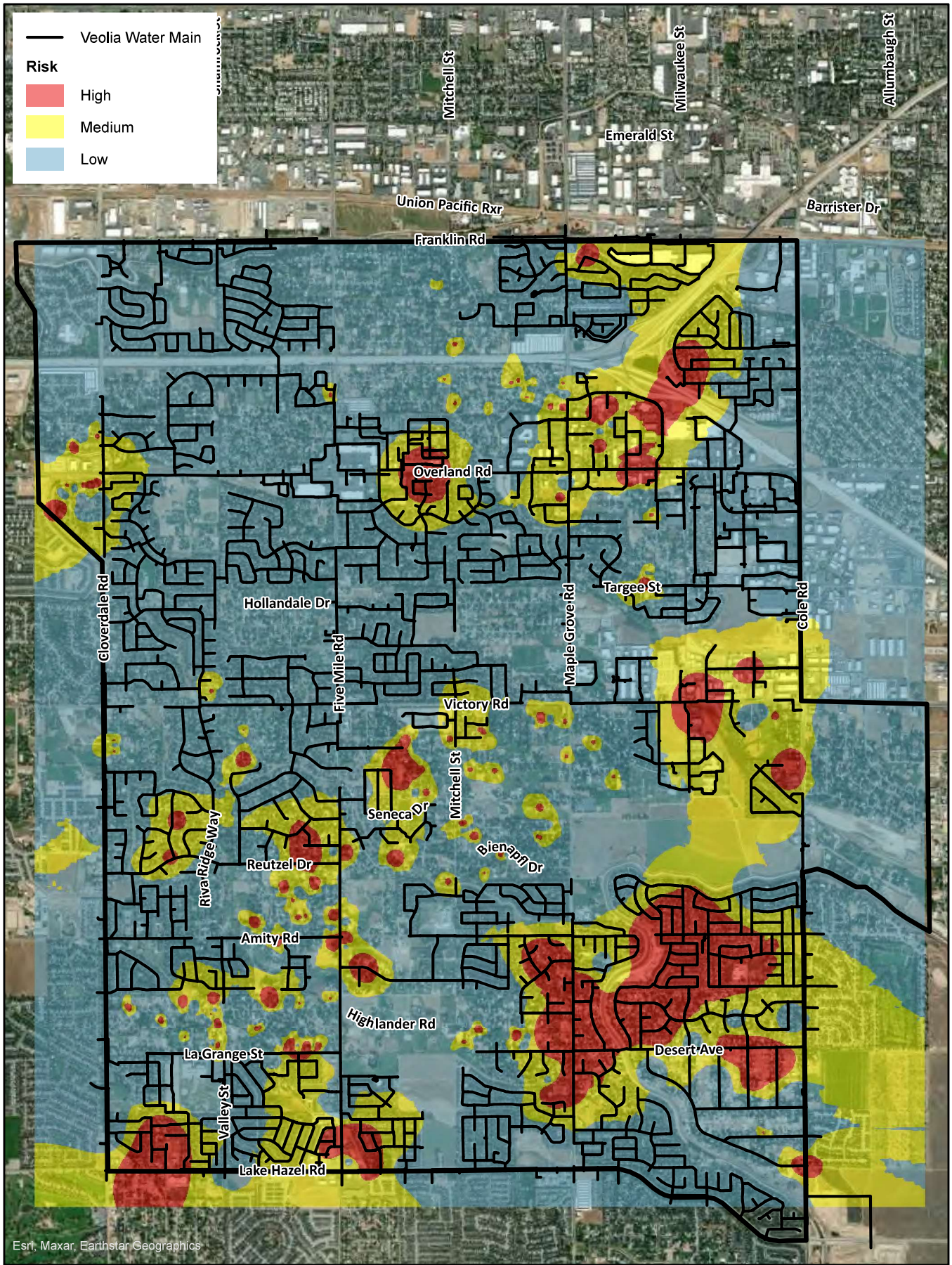
2022 GROUNDWATER ELEVATION SURFACE

Figure 10b

Risk Analysis

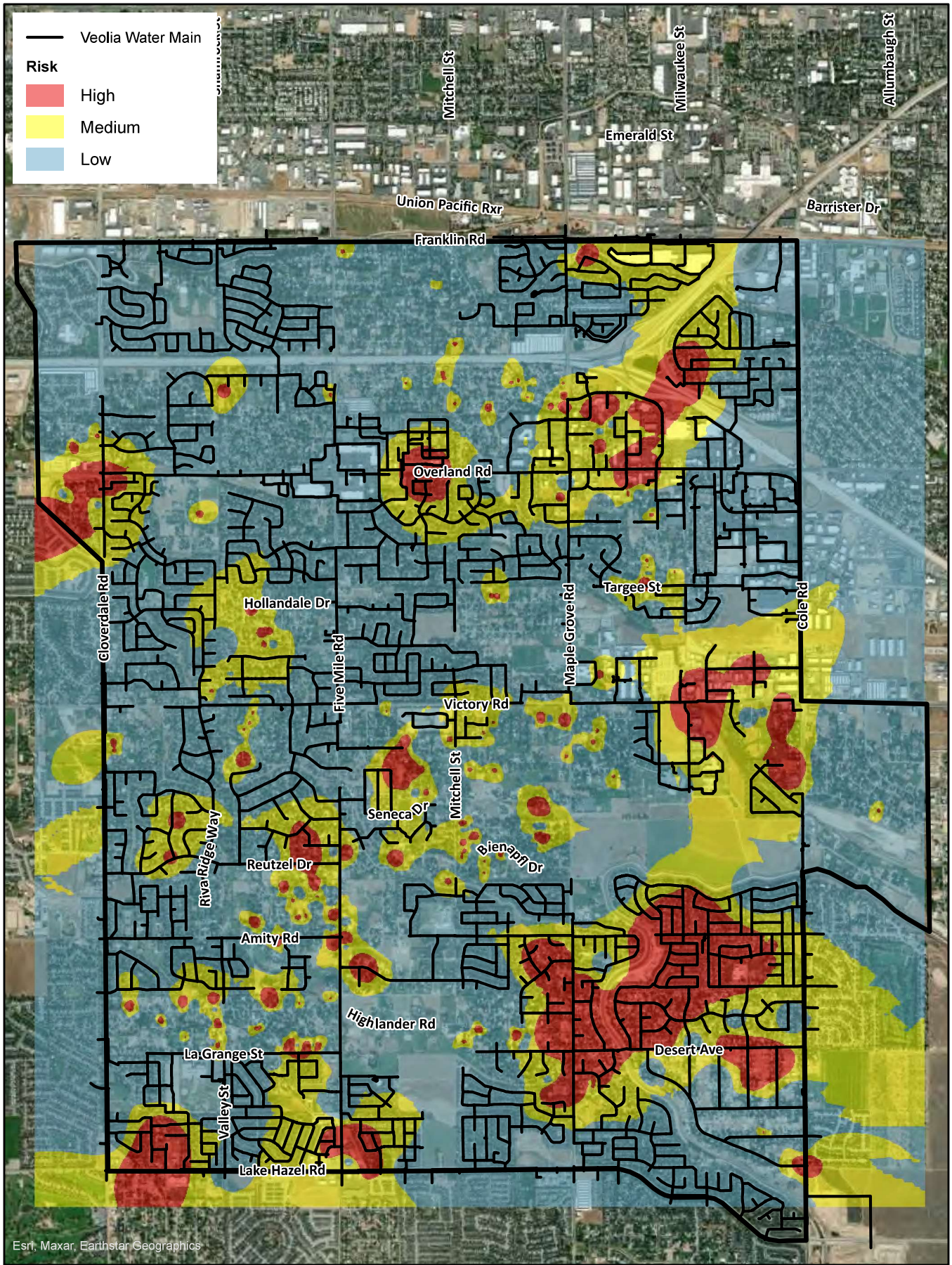
- Create a high-level planning tool to predict current and future well failure risk in the Study Area
- 939 wells were evaluated for risk
- Low Risk: WL >20 ft above well screen
- Moderate Risk: WL 5-20 ft above well screen
- High Risk: WL <5 ft above well screen





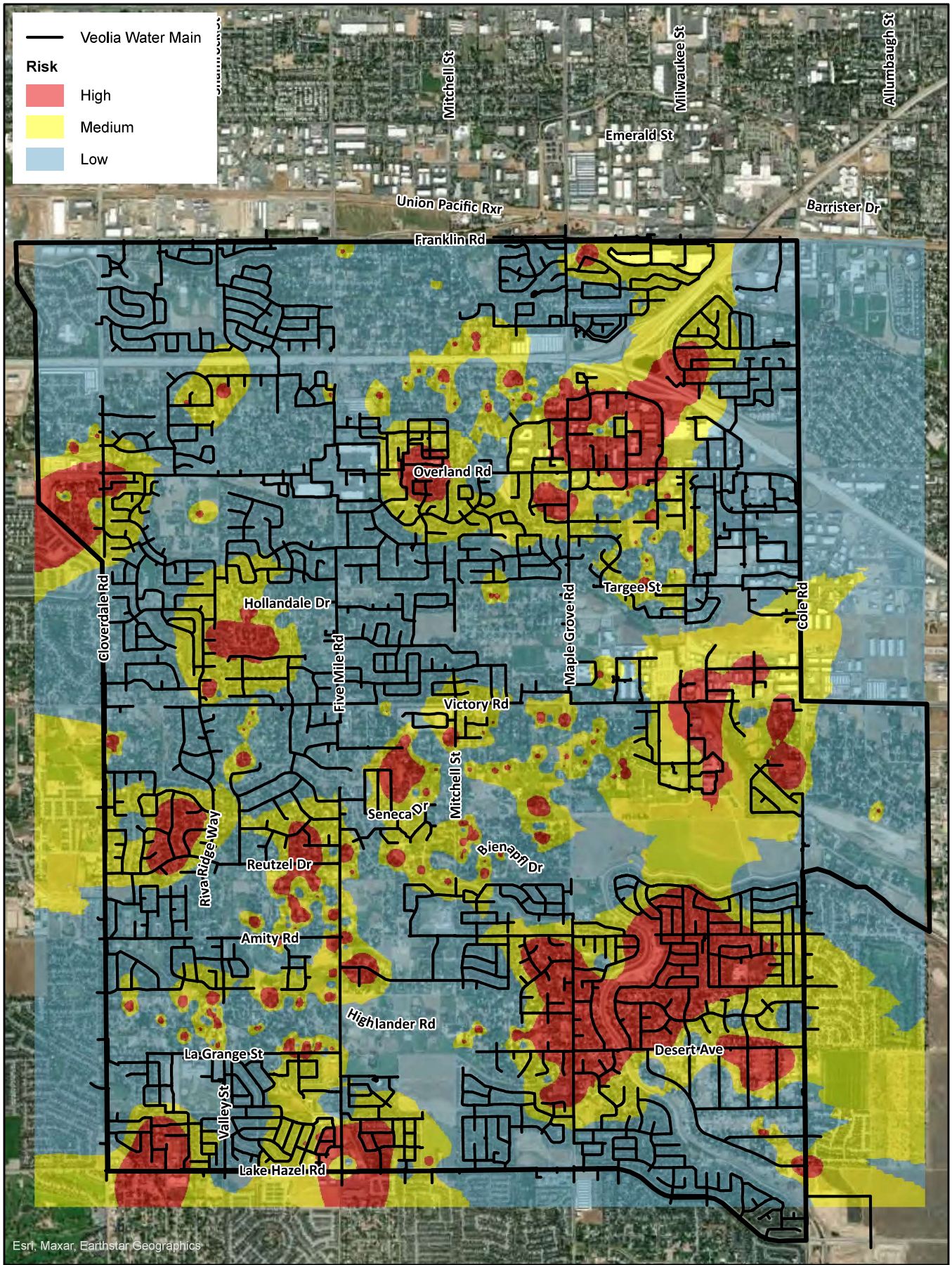
2022 RISK ASSESSMENT AND FEASIBILITY

Figure 11a



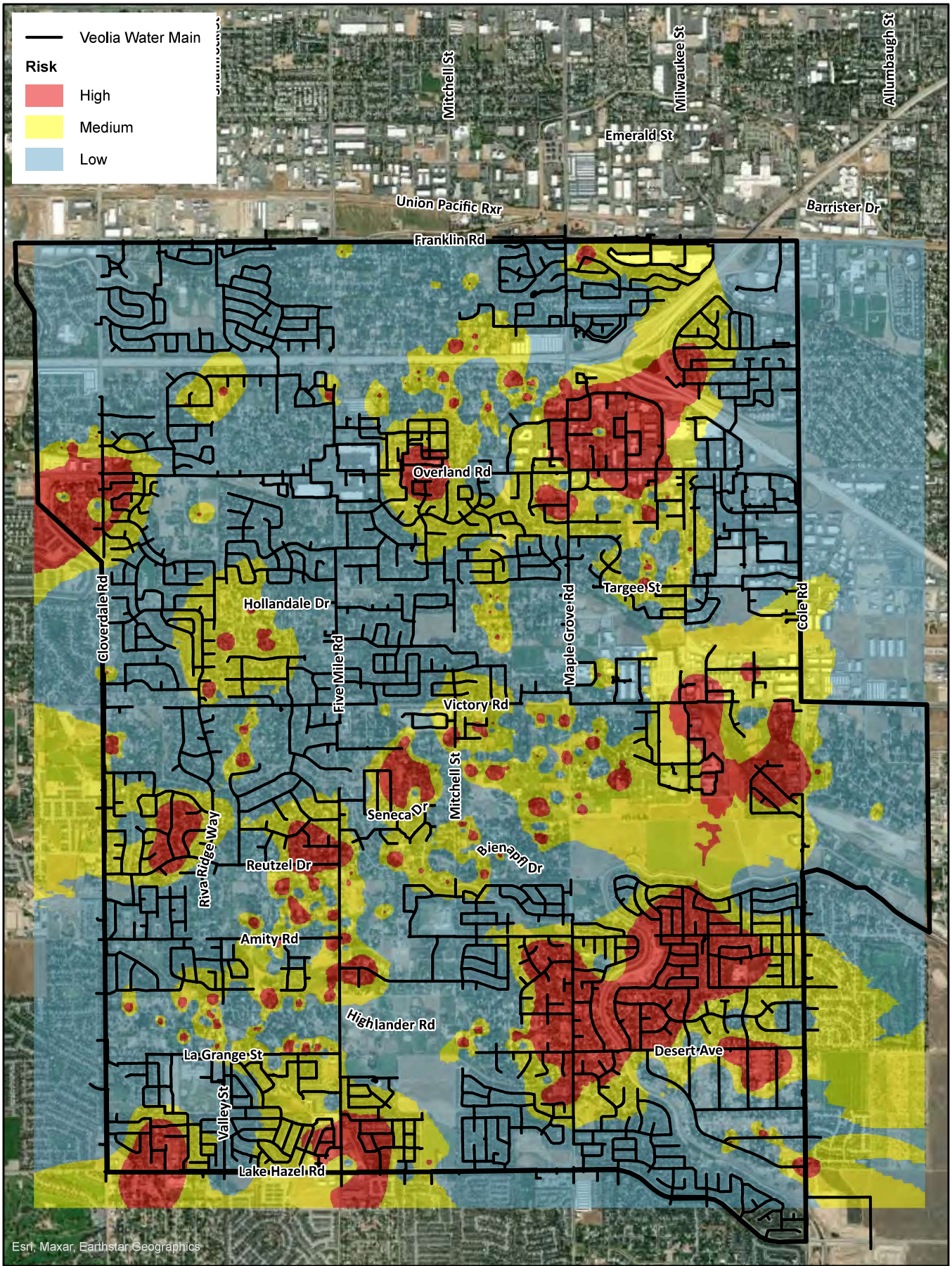
2027 RISK ASSESSMENT AND FEASIBILITY

Figure 12a



2032 RISK ASSESSMENT AND FEASIBILITY

Figure 13a

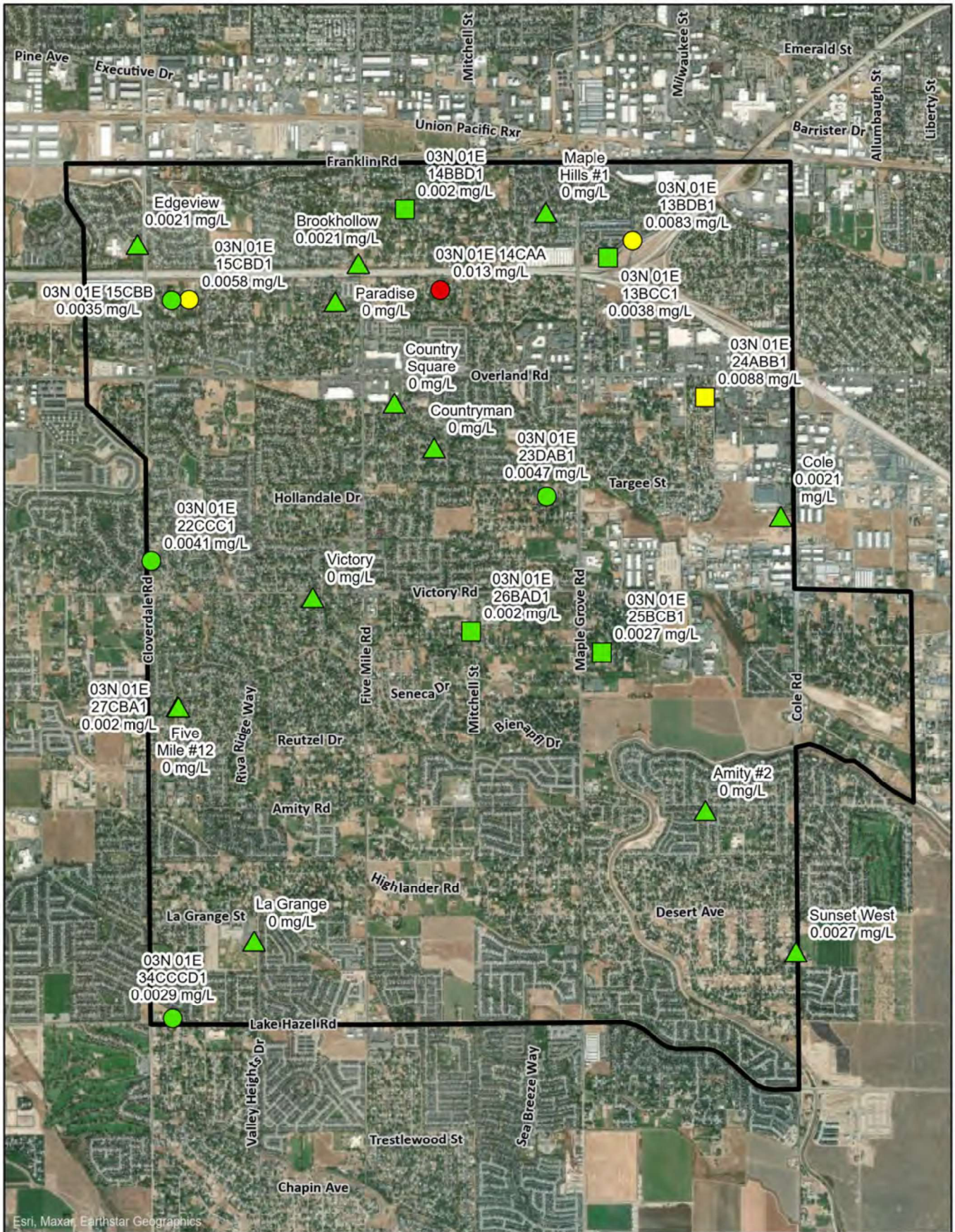


Esri, Maxar, Earthstar Geographics



2037 RISK ASSESSMENT AND FEASIBILITY

Figure 14a



0 0.5 mi

Analyte Concentration (mg/L)

- Low
- Moderate
- High

Sample Depth (ft bgs)

- <100
- 100-300
- △ >300

Project Area

The Idaho State standard for Arsenic is 0.5 mg/L while the Federal maximum contaminant level is 0.01 mg/L.

ARSENIC

WATER QUALITY REVIEW

Figure 15



interpreted with caution as some discrepancy between predicted and actual results is likely without additional field verification of well elevations, locations, and water levels.

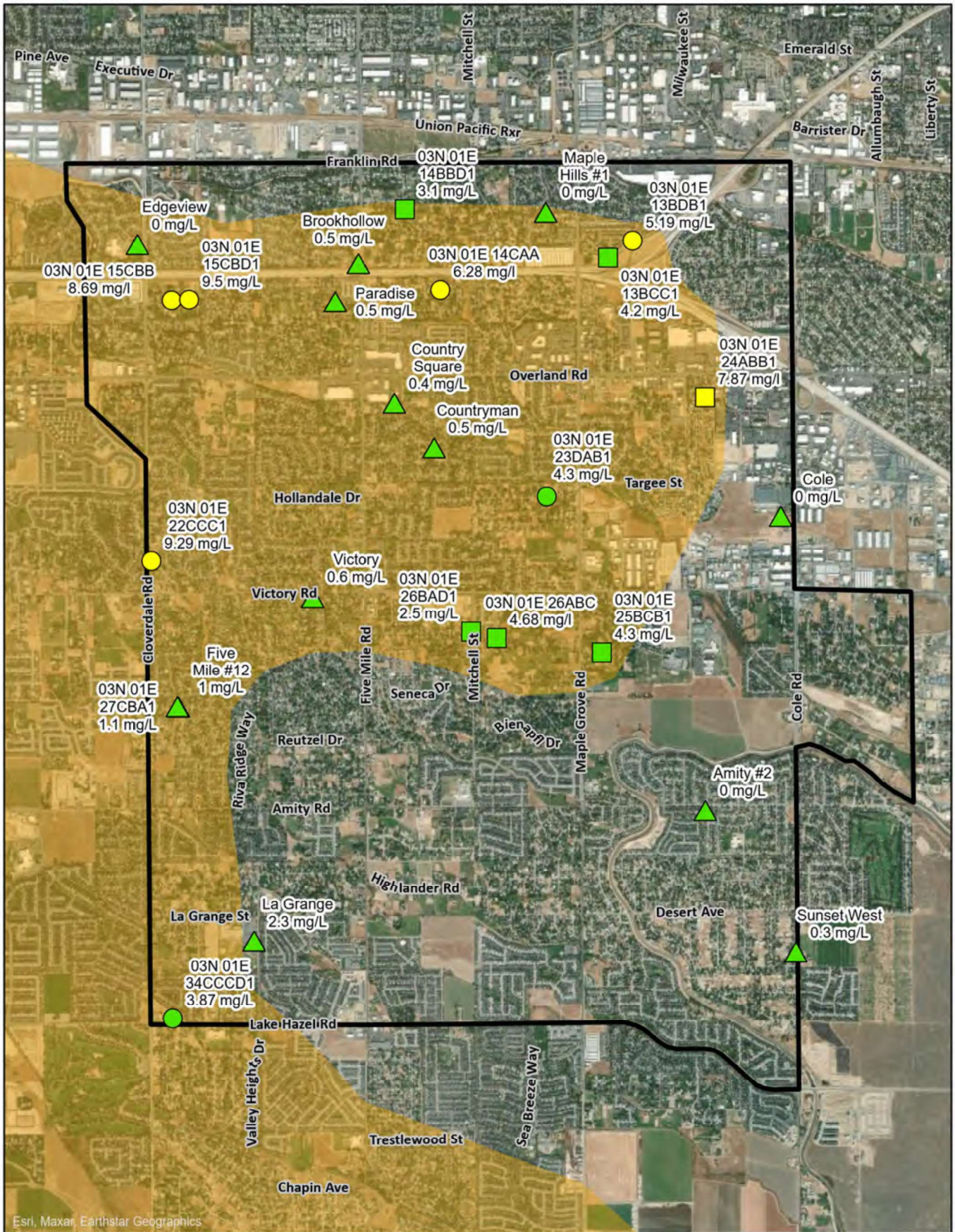
The study team included a total of 939 wells in the risk evaluation. The evaluation was performed for the years 2022, 2027, 2032, and 2037. **Table 8** shows the breakdown of risk for each of the years evaluated. For projections of risk in 5, 10, and 15 years, the study team calculated the average yearly water level decrease from the wells shown in **Plot 4** by using the transducer data (looking at the average decrease in water level in the four wells since 2016). The study team used the transducer data instead of the full data set because this data more accurately reflects groundwater usage in the study area. The calculated average water level decrease per year is approximately 0.93 feet per year. Using this average, the projected 2022 groundwater surface was lowered by the appropriate amount (4.65-foot decline by 2027, 9.29-foot decline by 2032, and 13.94-foot decline by 2037). The study team then compared the updated water level estimate to the elevation of the top of screen or bottom of casing to determine the risk for the future risk projections.

Table 8. Distribution of Wells by Risk

		Low	Moderate	High
2022	Number	786	69	84
	Percent	84%	7%	9%
2027	Number	752	95	92
	Percent	80%	10%	10%
2032	Number	720	100	119
	Percent	77%	11%	13%
2037	Number	692	100	147
	Percent	74%	11%	16%

As shown in **Table 8**, the number of wells that are identified as high risk increased by 1 to 3 percent every 5 years. Specific areas of risk are described more in Section 5.

The study team calculated risk for the years 2022 (**Figure 11**), 2027 (**Figure 12**), 2032 (**Figure 13**), and 2037 (**Figure 14**). The figures for these evaluations are shown both as an overall heat map (created using an inverse distance weighted or Kriging GIS interpolation method) based on all wells used in the risk evaluation, and as point maps to better show the spread of wells and what influenced the heat map creation. The heat maps may show areas as high risk; however, a closer examination of the point maps shows that some of these high-risk areas are characterized by only one well, or very few wells. Also, though some higher risk areas are shown in areas with somewhat shallower groundwater (based on the contour map shown in **Figure 10**), those wells marked as high risk may not have been drilled as deep as those in areas with deeper groundwater levels when initially drilled. The domestic wells in the study area were likely drilled to their specific depths based on the depth of the water identified in each area during installation (i.e., shallower groundwater would correlate to shallower wells, and deeper groundwater would correlate to deeper wells).

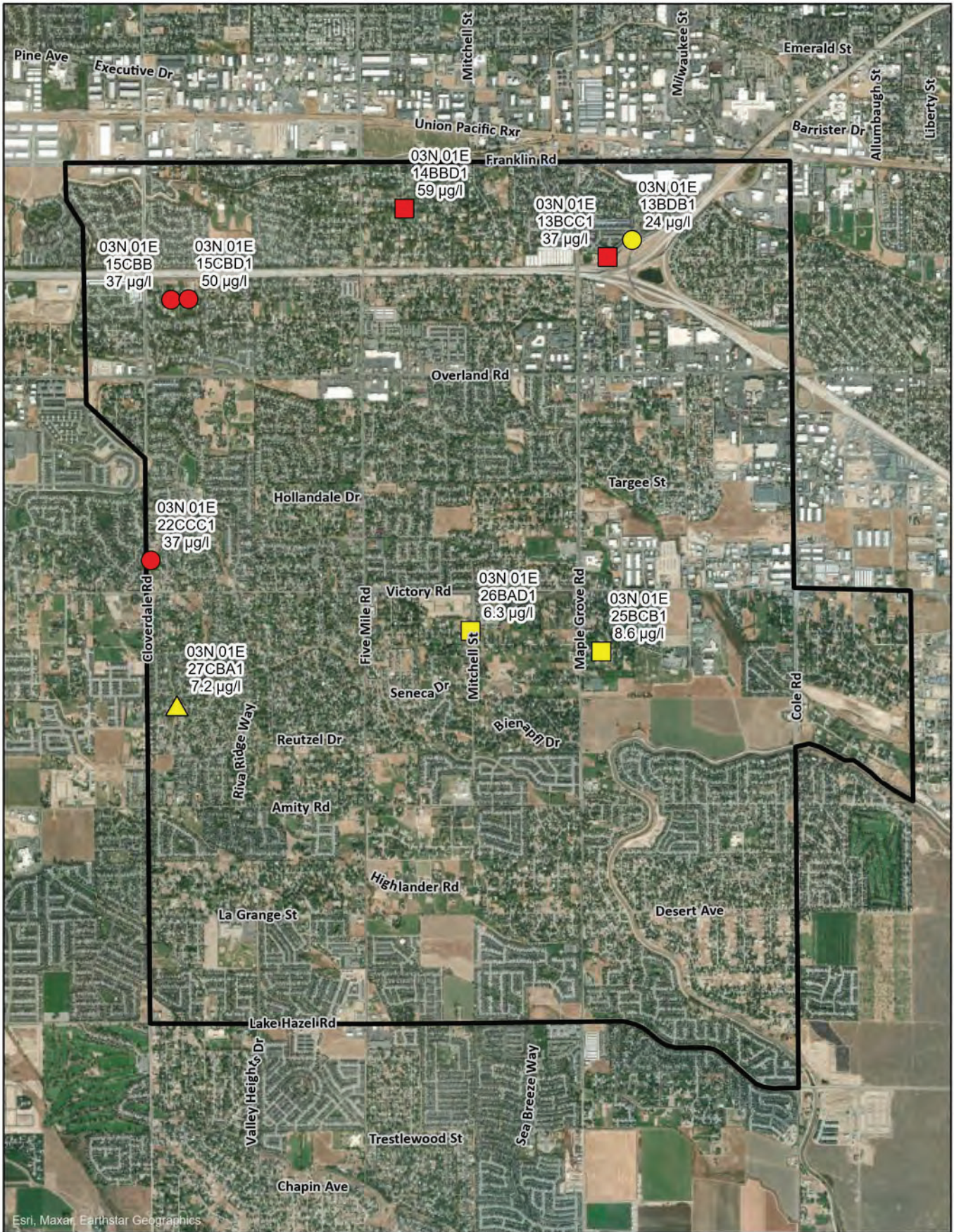


Esri, Maxar, Earthstar Geographics

0 0.5 mi

Analyte Concentration (mg/L)	Sample Depth (ft bgs)	Nitrate Priority Area
● Low	○ <100	■ Nitrate Priority Area
● Moderate	□ 100-300	□ Project Area
	△ >300	<i>The Idaho State standard for Nitrate is 10 mg/L.</i>

NITRATE
WATER QUALITY REVIEW
Figure 16



Esri, Maxar, Earthstar Geographics



0 0.5 mi

Analyte Concentration (mg/L)

- Moderate
- High

Sample Depth (ft bgs)

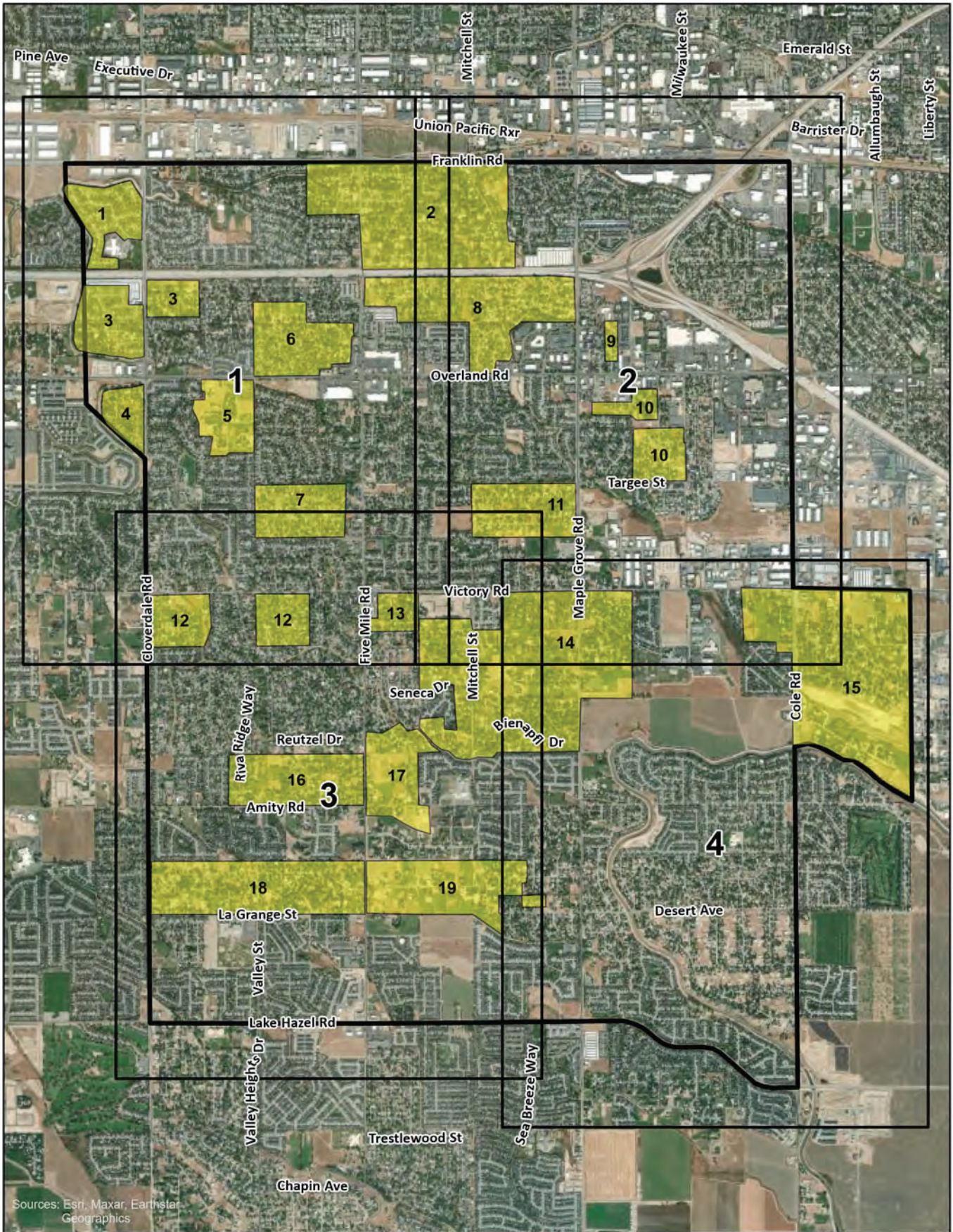
- <100
- 100-300

□ Project Area

The Federal maximum contaminant level is 30 µg/L.

URANIUM
WATER QUALITY REVIEW

Figure 17



Sources: Esri, Maxar, Earthstar Geographics



0 0.5 mi



Area of Interest

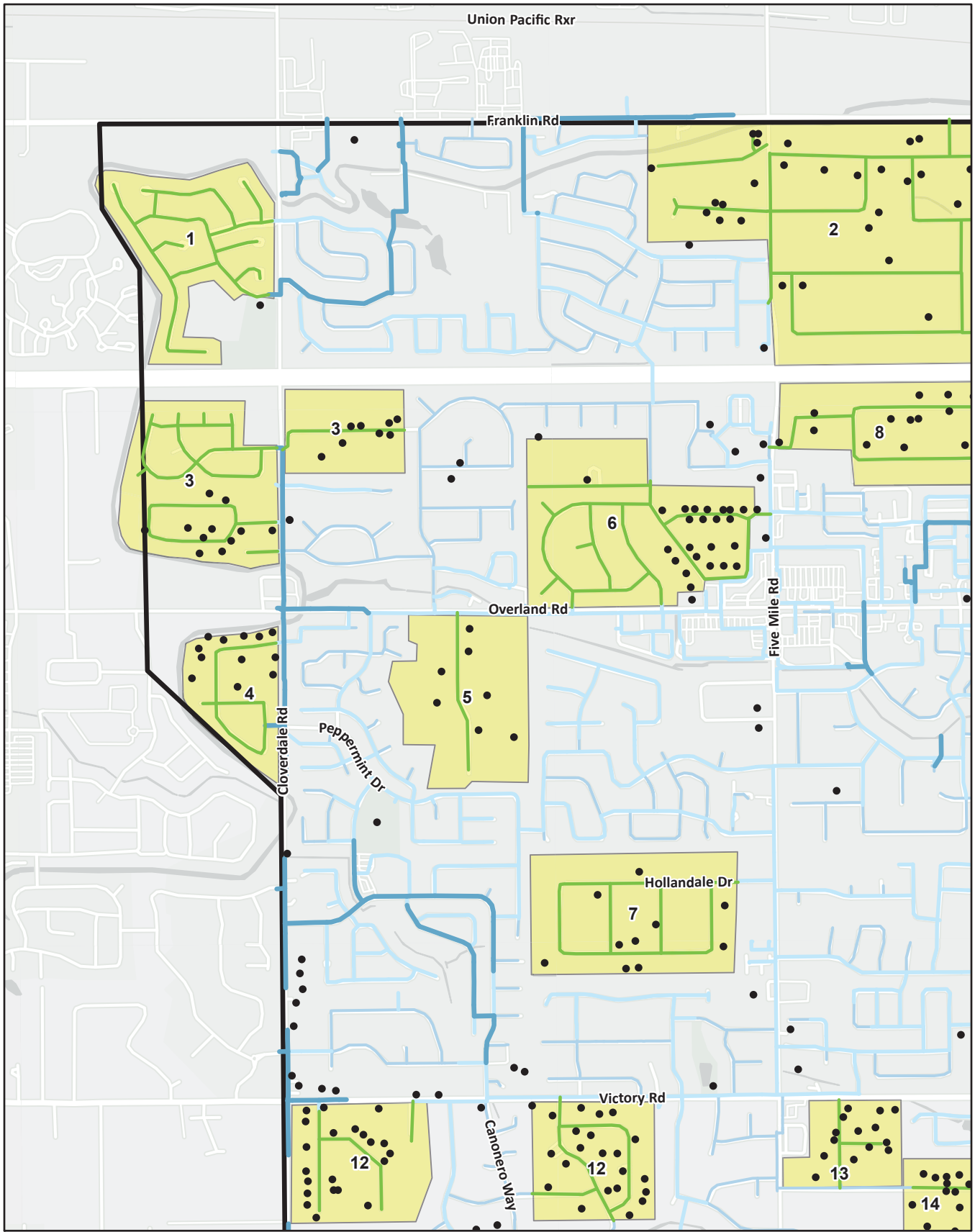


Page Extent



Project Area

AREAS OF INTEREST
PROPOSED PIPELINES
Figure 18a



- Well
 - Proposed Pipeline
 - Area of Interest
 - Project Area
- | Diameter (in) | |
|---------------|------------|
| | 0.0 - 6.0 |
| | 8.0 - 10.0 |
| | 12.0 |



AREAS OF INTEREST AND PROPOSED PIPELINE

Figure 18b-1



Table 9. Breakdown of Wells by Area Identified for Veolia Upgrades

Area	Number of Properties	Number of Wells Verified	Risk Year	High	Moderate	Low	Risk Ranking ¹
1	152	0	2022	N/A			14
			2027				
			2032				
			2037				
2	224	48	2022	0	2	46	10
			2027	0	3	45	
			2032	0	5	43	
			2037	1	5	42	
3	181	19	2022	1	1	17	8
			2027	1	1	17	
			2032	1	1	17	
			2037	1	2	16	
4	65	12	2022	1	4	7	2
			2027	2	7	3	
			2032	2	8	2	
			2037	5	5	2	
5	11	7	2022	0	0	7	12
			2027	0	1	6	
			2032	0	1	6	
			2037	0	1	6	
6	116	23	2022	0	0	23	14
			2027	0	0	23	
			2032	0	0	23	
			2037	0	0	23	
7	65	10	2022	0	0	10	6
			2027	0	4	6	
			2032	0	6	4	
			2037	0	6	4	
8	175	64	2022	0	10	54	3
			2027	1	12	51	
			2032	7	10	47	
			2037	10	8	46	
9	14	5	2022	1	2	2	1
			2027	1	2	2	
			2032	2	1	2	
			2037	3	1	1	



Table 10. Cost Breakdown for New Veolia Connections or New Domestic Wells

Area	Number of Properties	New Veolia Connections				New Domestic Well	
		Length of new line	Cost of new line	Cost of new connections	Total Cost Per Area	Cost for New Wells (no new pump)	Cost for New Wells (with new pump)
1	152	8,850.74	\$2,655,000	\$547,000	\$3,202,000	\$3,040,000	\$3,800,000
2	224	19,830.78	\$5,949,000	\$806,000	\$6,755,000	\$4,480,000	\$5,600,000
3	181	9,949.67	\$2,985,000	\$652,000	\$3,637,000	\$3,620,000	\$4,525,000
4	65	3,231.14	\$969,000	\$234,000	\$1,203,000	\$1,300,000	\$1,625,000
5	11	1,700.46	\$510,000	\$40,000	\$550,000	\$220,000	\$275,000
6	116	10,568.89	\$3,171,000	\$418,000	\$3,589,000	\$2,320,000	\$2,900,000
7	65	6,558.70	\$1,968,000	\$234,000	\$2,202,000	\$1,300,000	\$1,625,000
8	175	14,817.71	\$4,445,000	\$630,000	\$5,075,000	\$3,500,000	\$4,375,000
9	14	805.42	\$242,000	\$50,000	\$292,000	\$280,000	\$350,000
10	49	4,046.18	\$1,214,000	\$176,000	\$1,390,000	\$980,000	\$1,225,000
11	78	5,623.00	\$1,687,000	\$281,000	\$1,968,000	\$1,560,000	\$1,950,000
12	80	6,694.97	\$2,008,000	\$288,000	\$2,296,000	\$1,600,000	\$2,000,000
13	23	1,394.44	\$418,000	\$83,000	\$501,000	\$460,000	\$575,000
14	272	26,879.12	\$8,064,000	\$979,000	\$9,043,000	\$5,440,000	\$6,800,000
15	179	24,522.54	\$7,357,000	\$644,000	\$8,001,000	\$3,580,000	\$4,475,000
16	87	6,593.18	\$1,978,000	\$313,000	\$2,291,000	\$1,740,000	\$2,175,000
17	49	4,345.10	\$1,304,000	\$176,000	\$1,480,000	\$980,000	\$1,225,000
18	157	9,805.91	\$2,942,000	\$565,000	\$3,507,000	\$3,140,000	\$3,925,000
19	48	4,569.04	\$1,371,000	\$173,000	\$1,544,000	\$960,000	\$1,200,000
Totals	2025	170,787	\$51,237,000	\$7,289,000	\$58,526,000	\$40,500,000	\$50,625,000