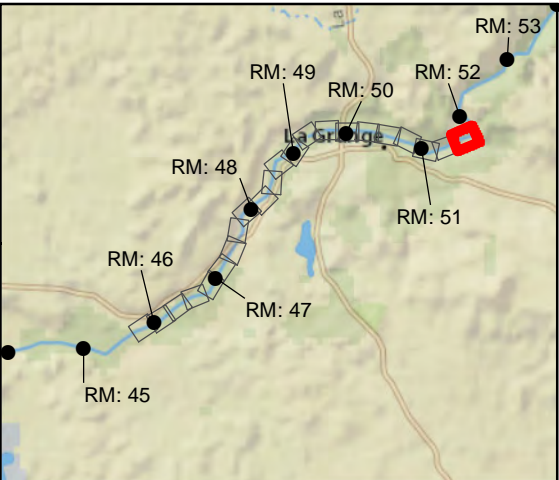
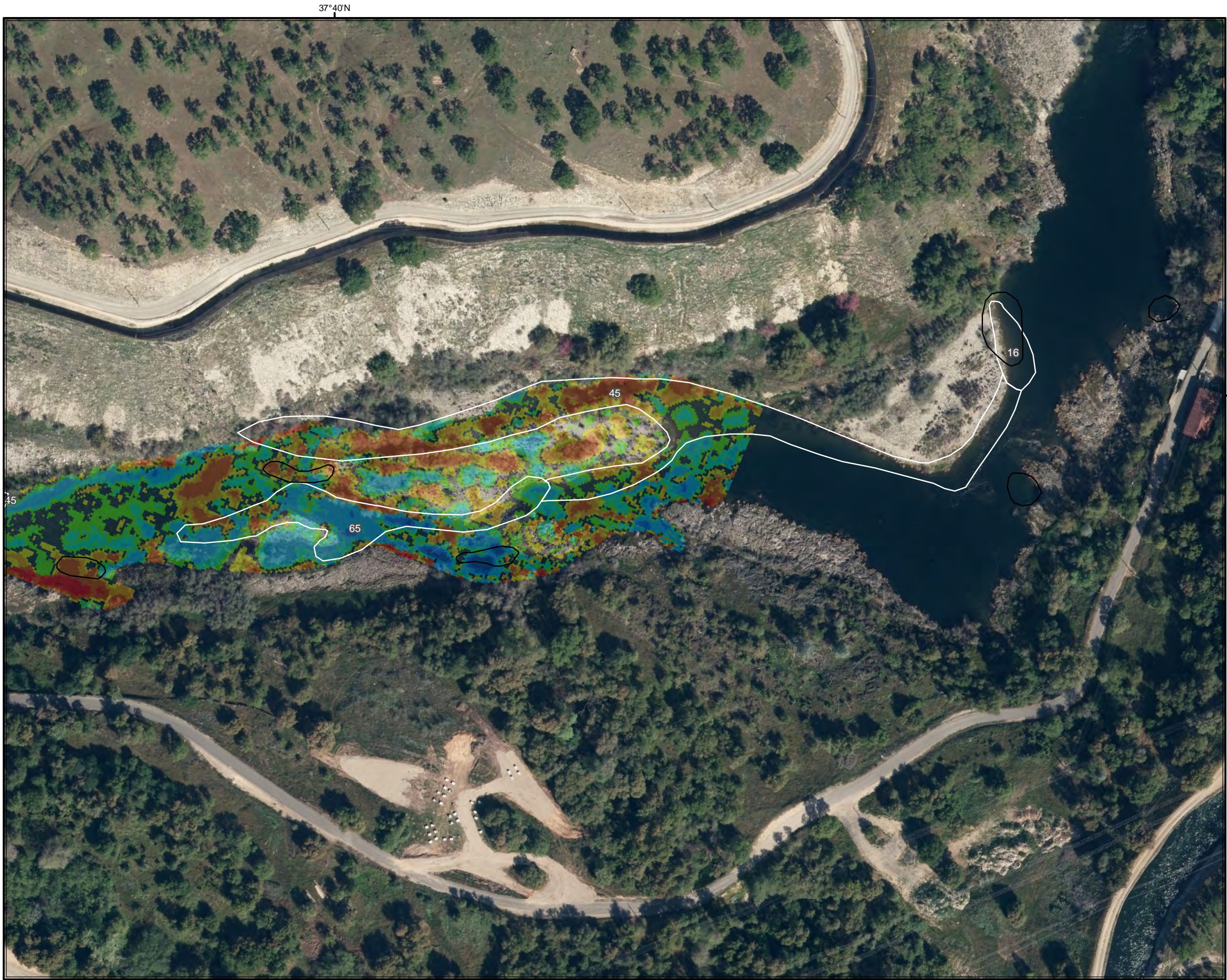


**STUDY REPORT W&AR-04**  
**SPAWNING GRAVEL IN THE LOWER TUOLUMNE RIVER**

**ATTACHMENT A**

**BED ELEVATION CHANGES IN THE LOWER TUOLUMNE RIVER  
FROM RM 51.5 TO RM 45.5 DETERMINED FROM DIFFERENCING OF  
2005 AND 2012 DIGITAL TERRAIN MODELS**



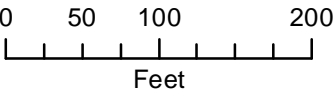


Page 1 of 22

- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- feet
- |             |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |



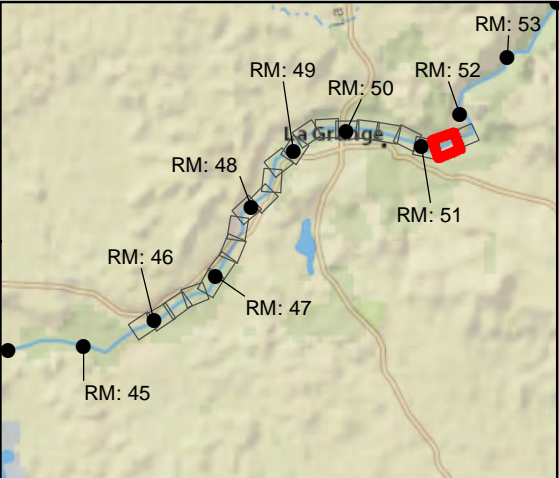
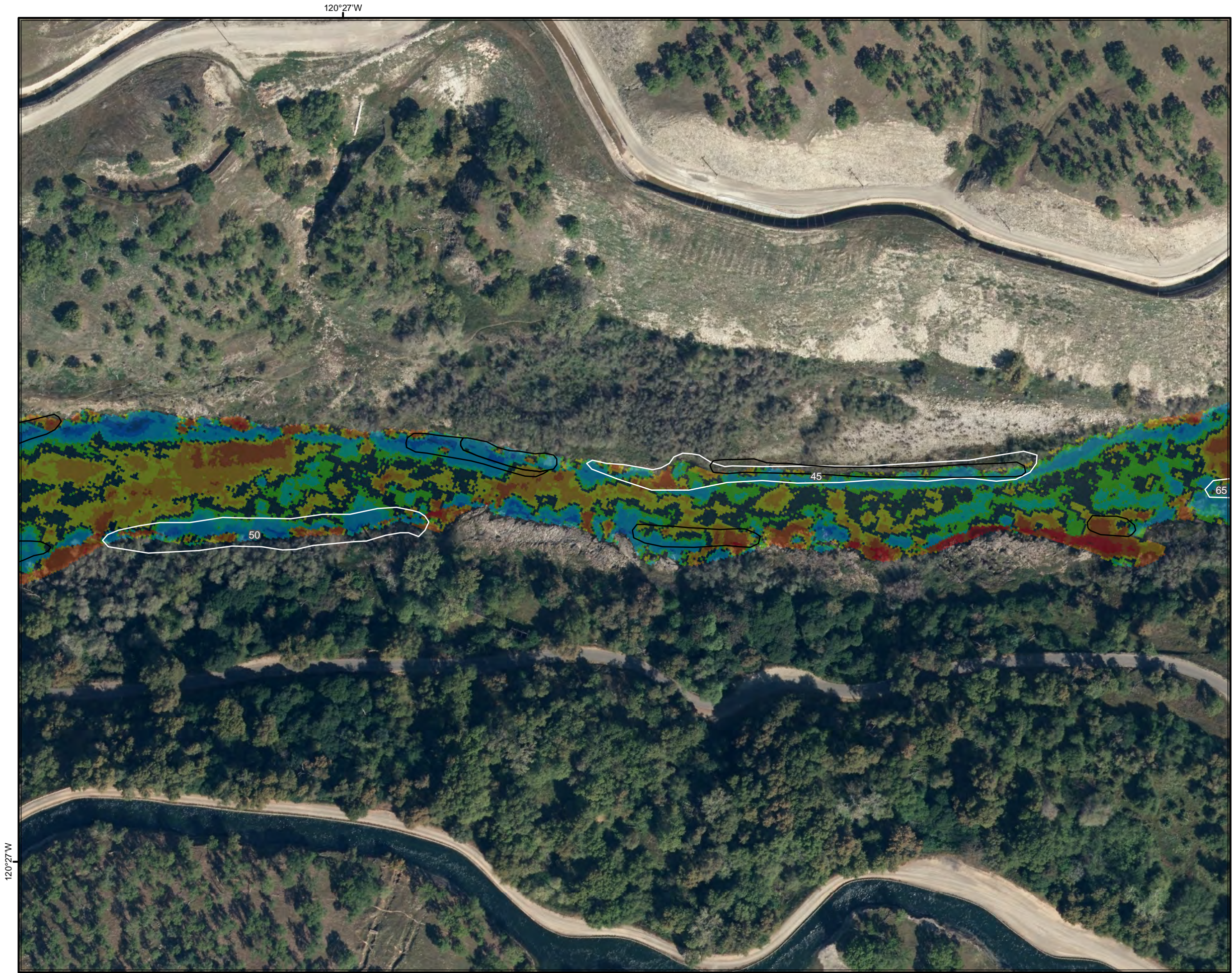
### Attachment A

Don Pedro Project (FERC No.2299)

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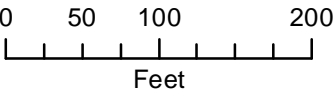
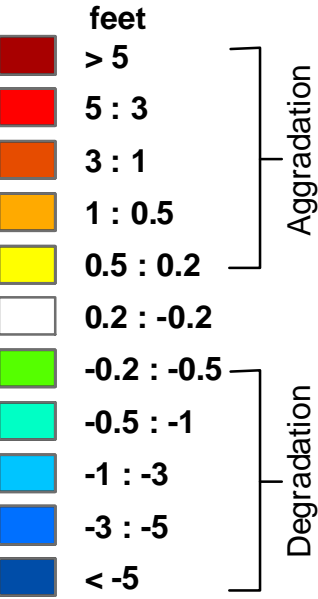




Page 2 of 22

- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference



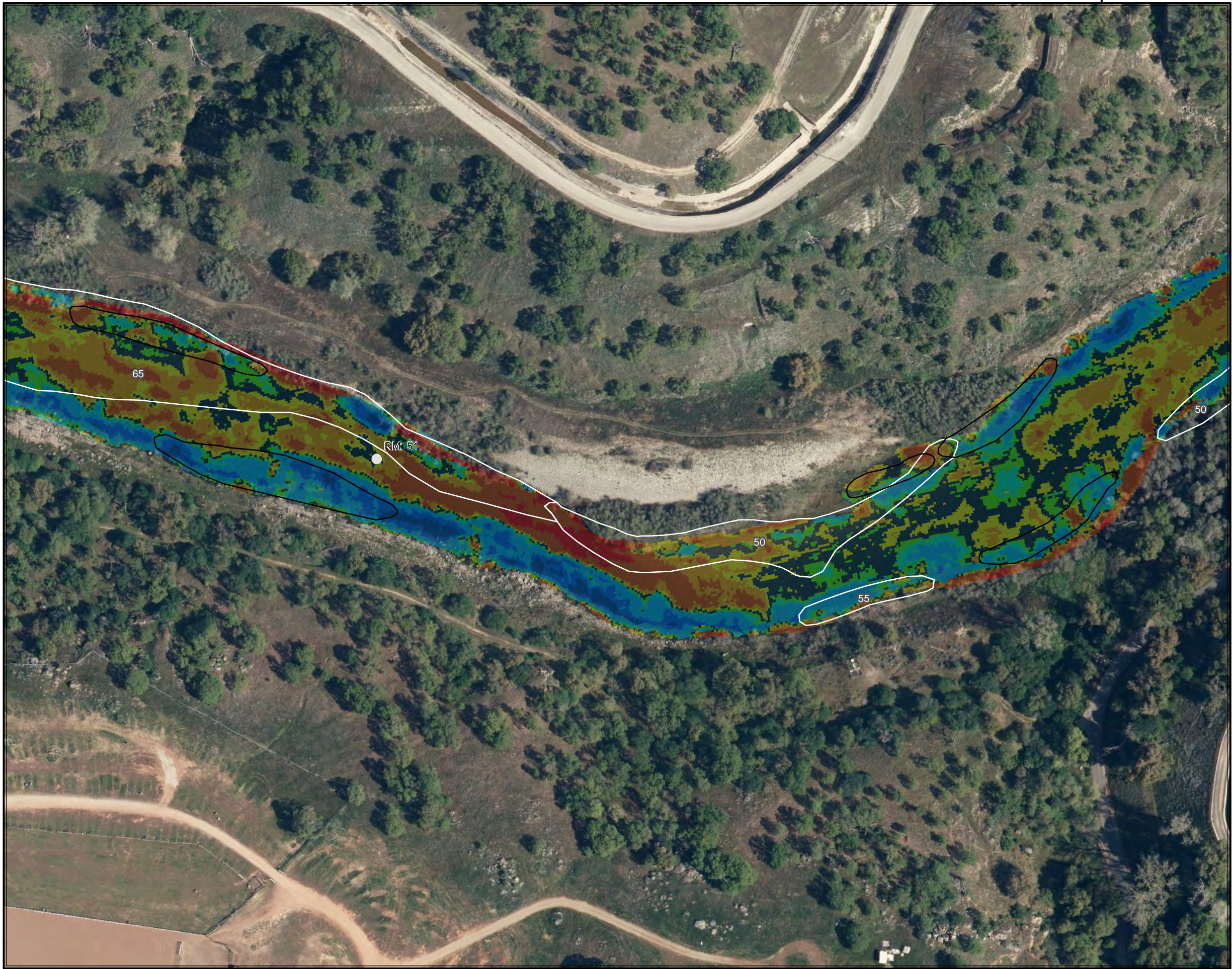
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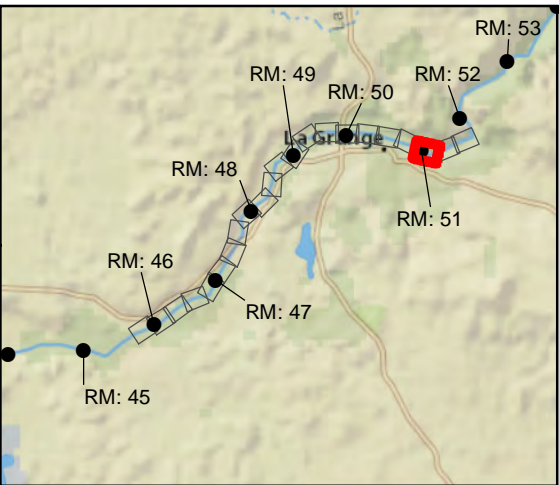
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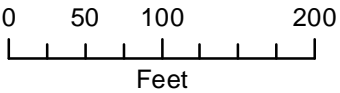
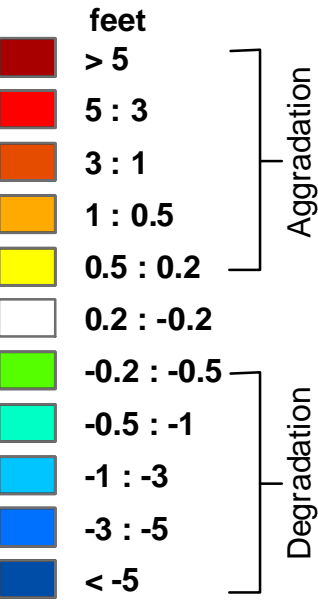
120°27'W



Page 3 of 22

- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

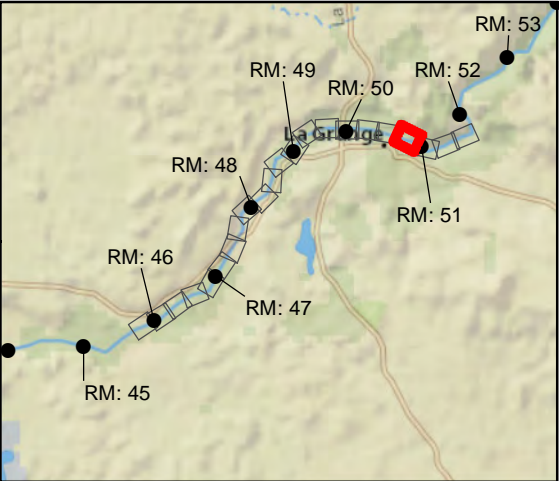
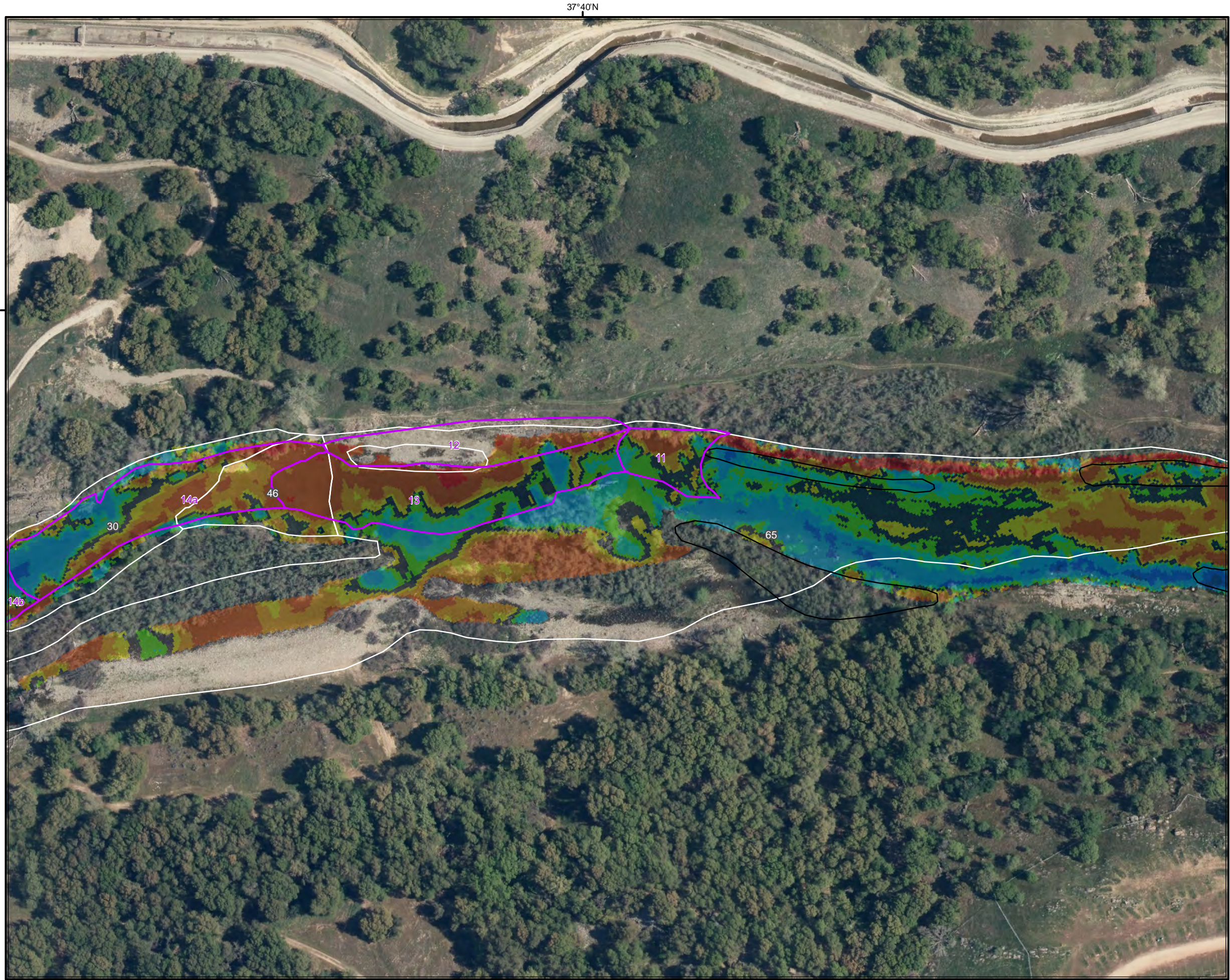


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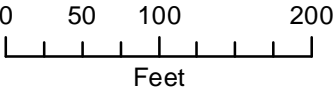


Page 4 of 22

- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- feet
- |              |             |             |
|--------------|-------------|-------------|
| Red          | > 5         | Aggradation |
| Red-Orange   | 5 : 3       |             |
| Orange       | 3 : 1       |             |
| Yellow       | 1 : 0.5     |             |
| Light Yellow | 0.5 : 0.2   |             |
| White        | 0.2 : -0.2  |             |
| Light Green  | -0.2 : -0.5 | Degradation |
| Green        | -0.5 : -1   |             |
| Light Blue   | -1 : -3     |             |
| Blue         | -3 : -5     |             |
| Dark Blue    | < -5        |             |



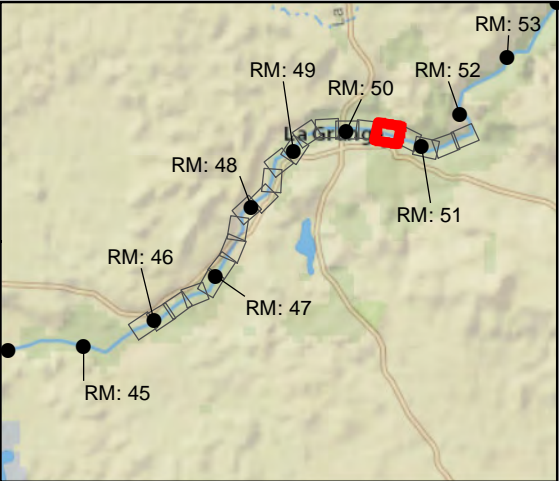
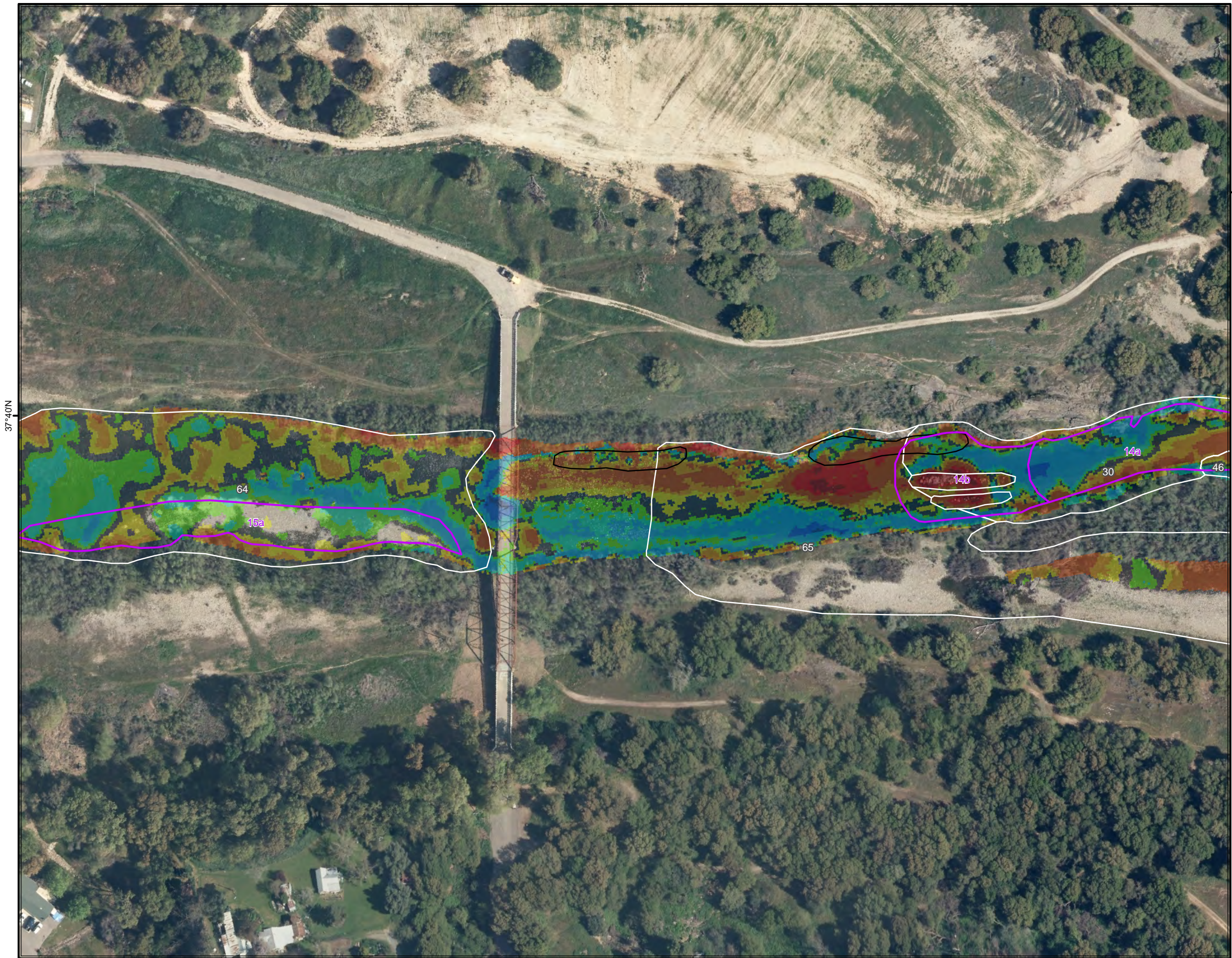
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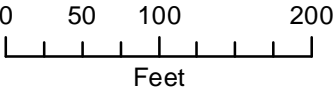
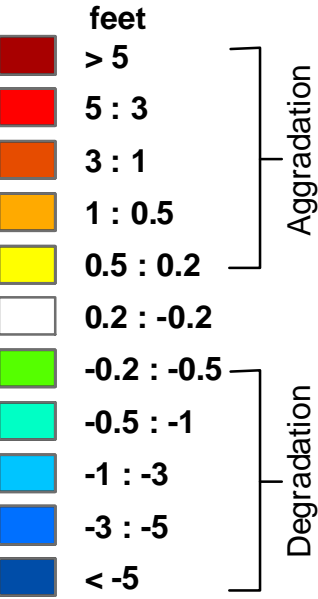




Page 5 of 22

- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

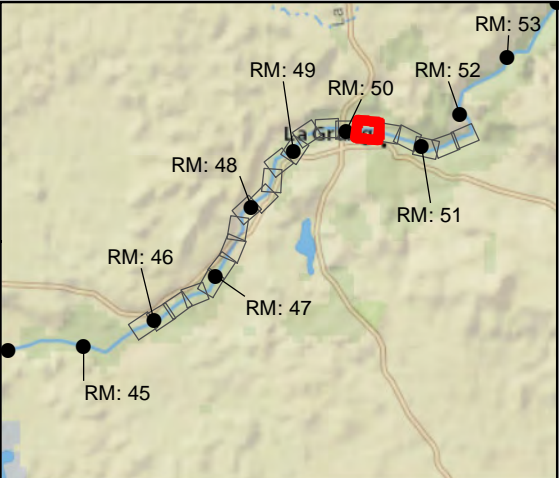
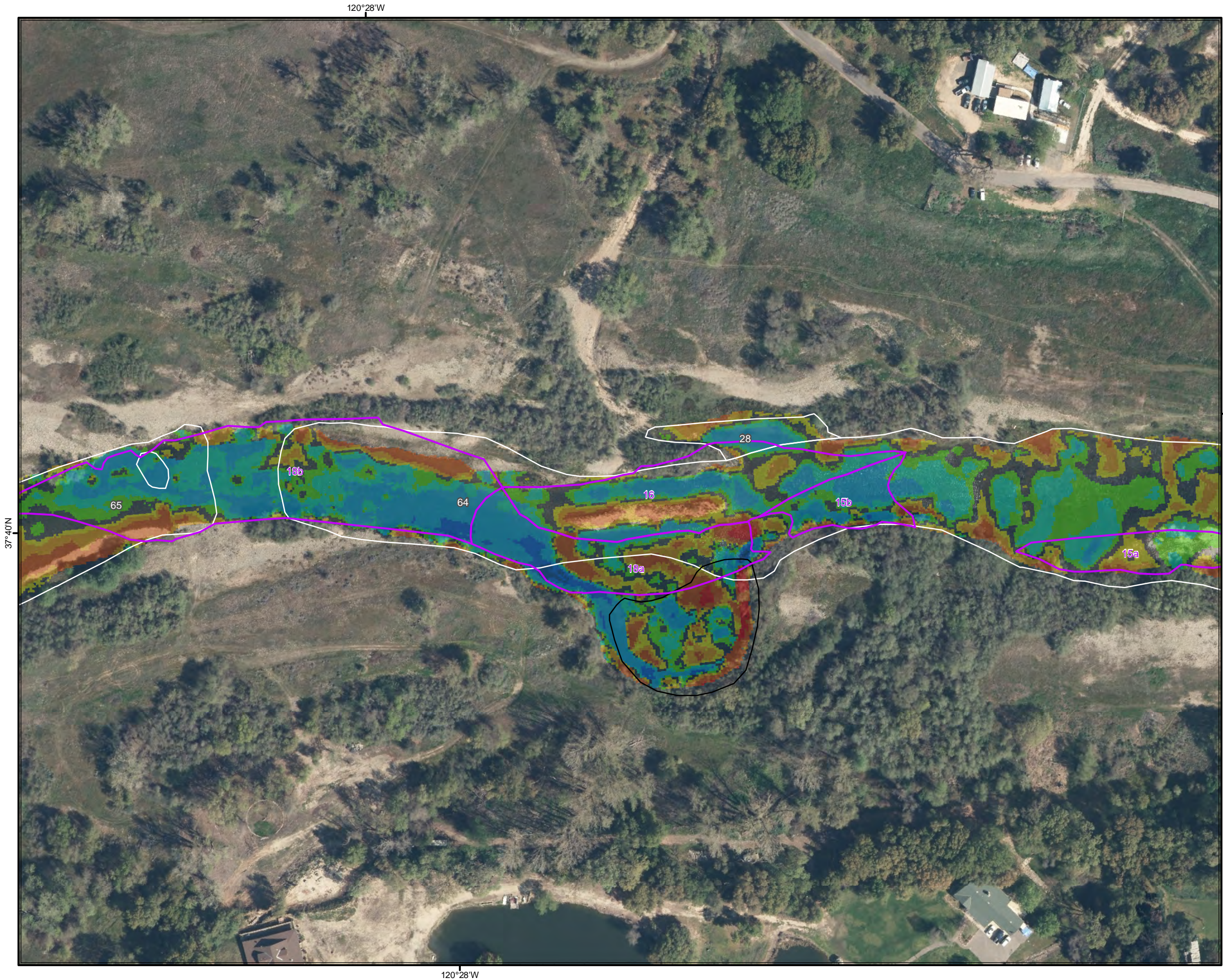


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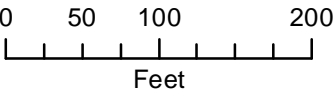


Page 6 of 22

- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- feet
- |             |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |



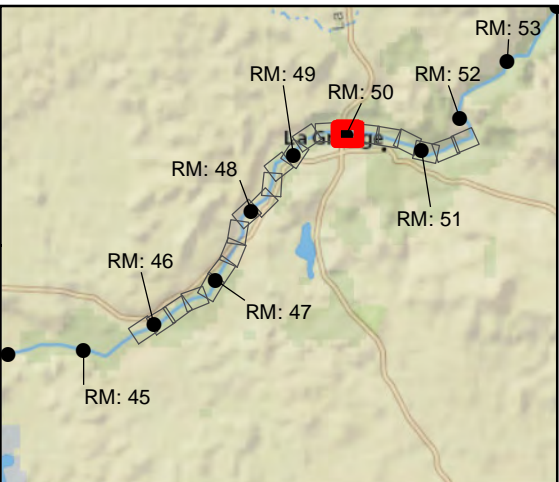
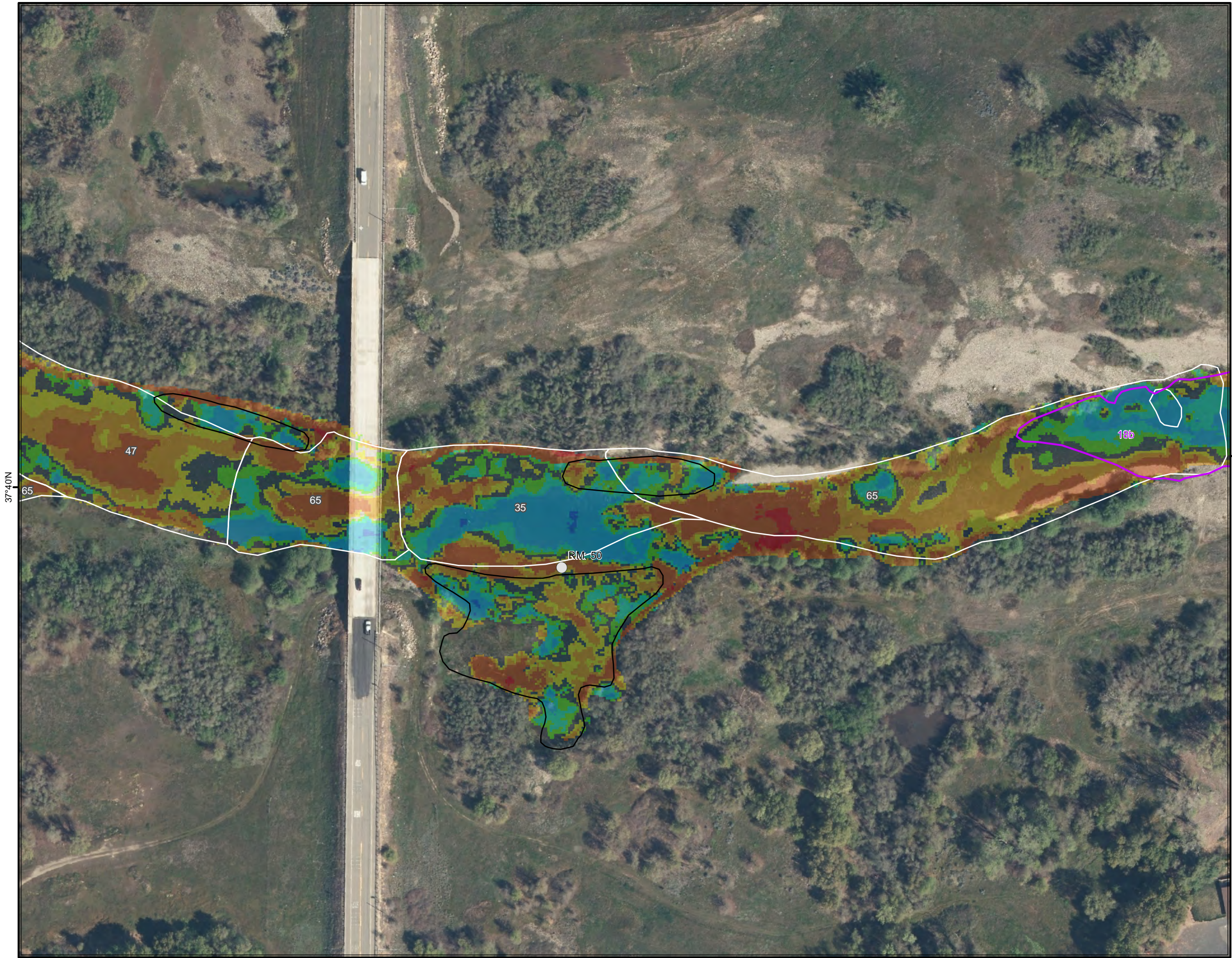
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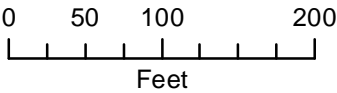
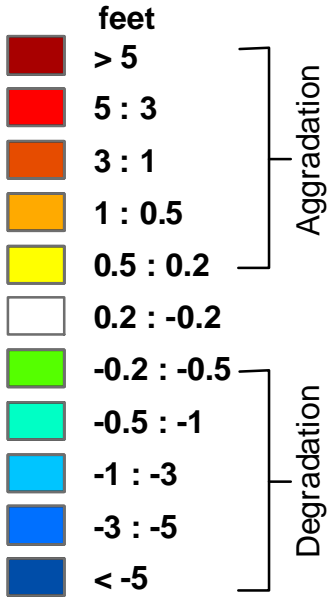




Page 7 of 22

- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

**2005 - 2012  
Surface Difference**

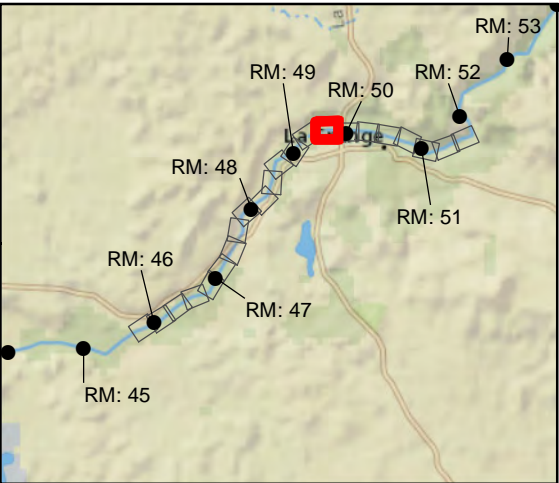
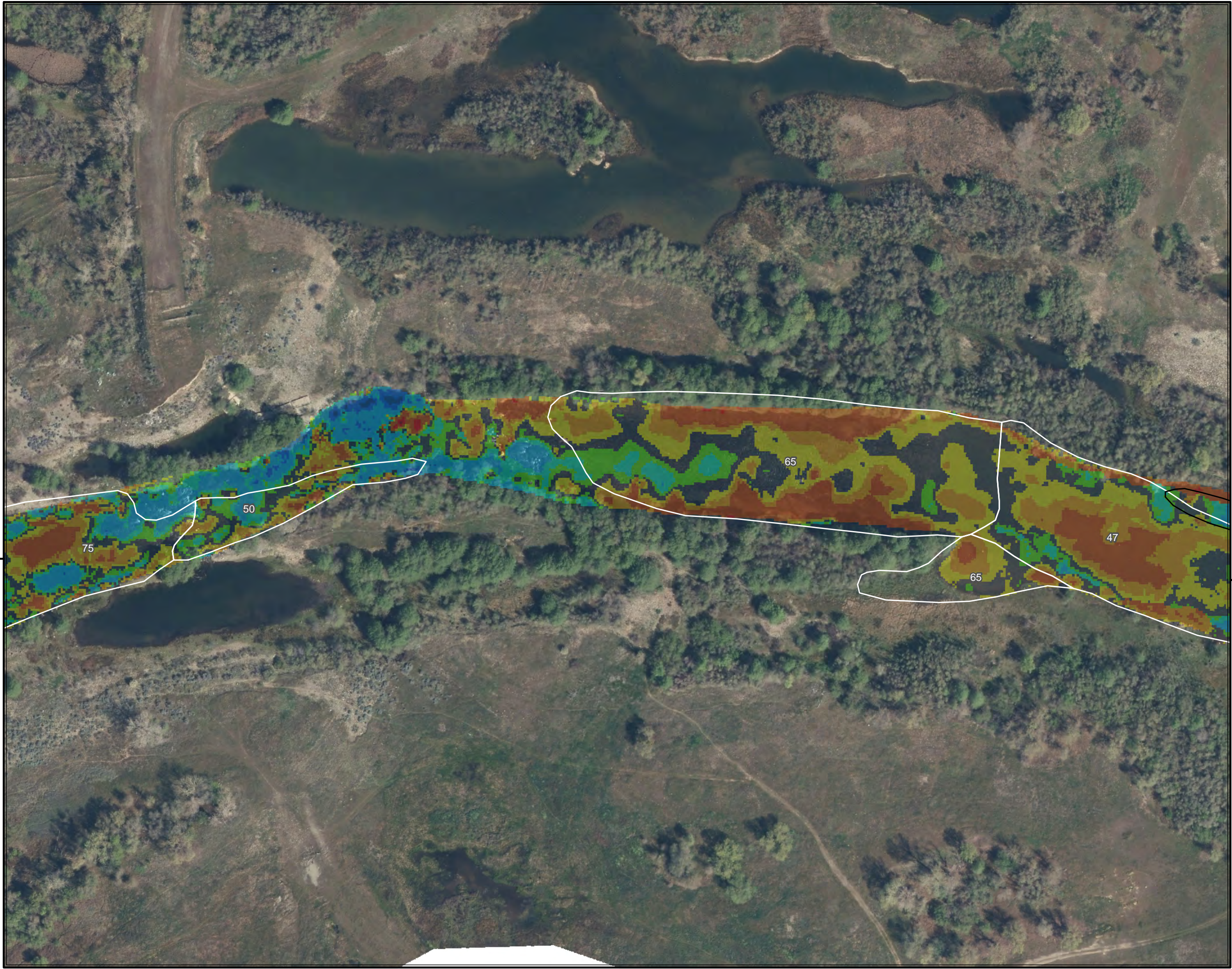


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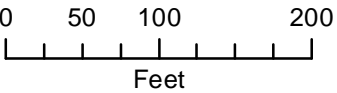




- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- | feet        |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |

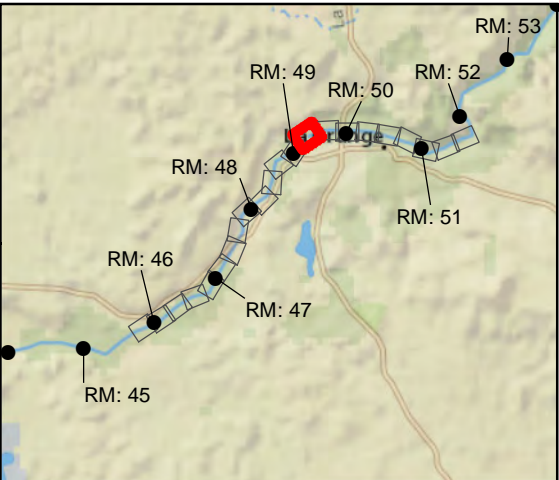
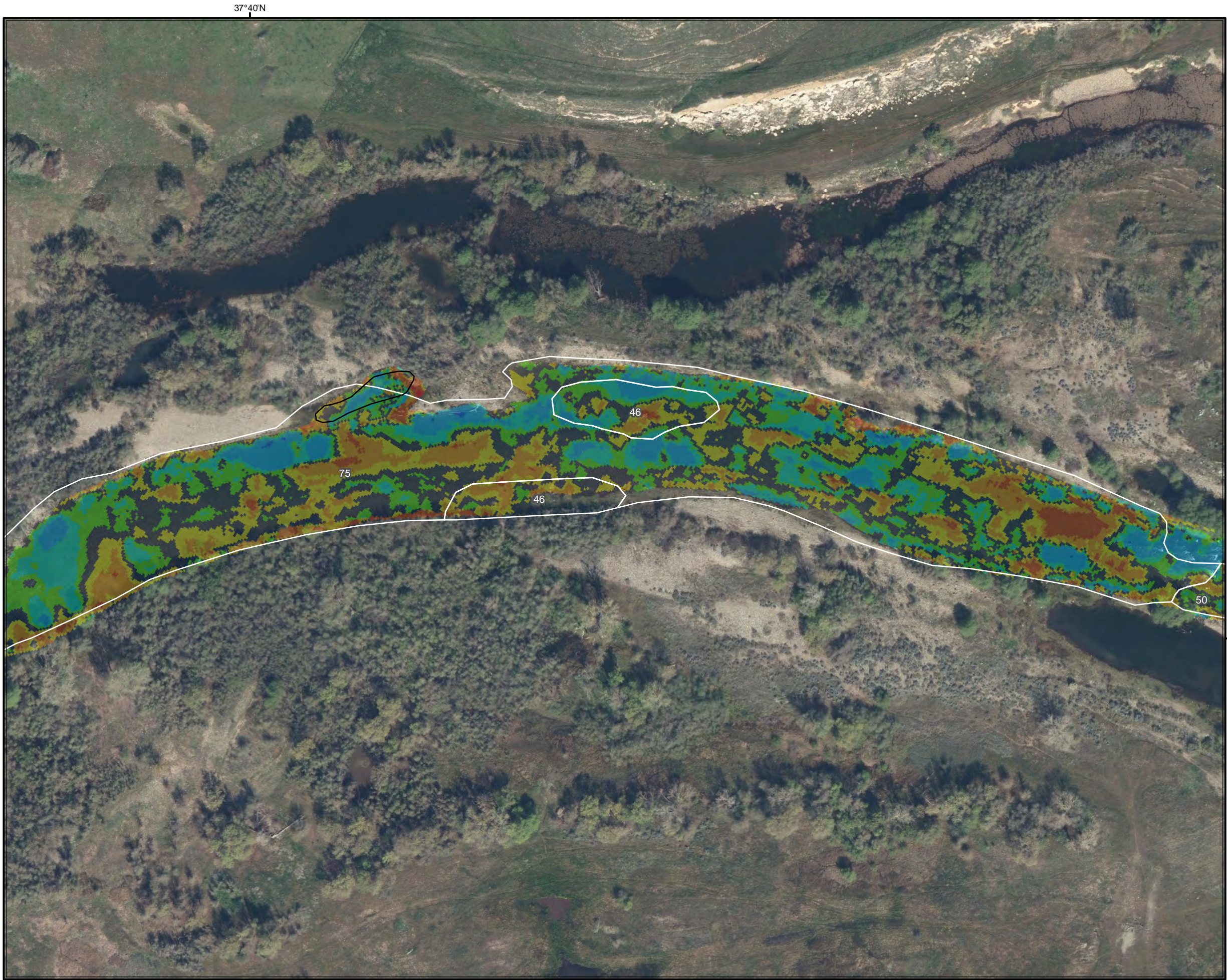


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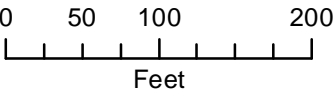


Page 9 of 22

- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- feet
- |             |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |

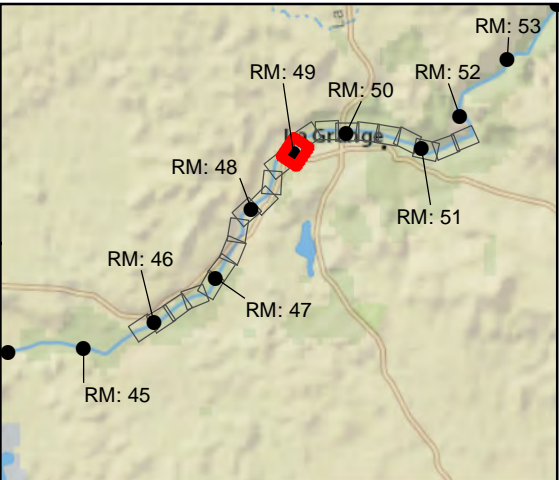
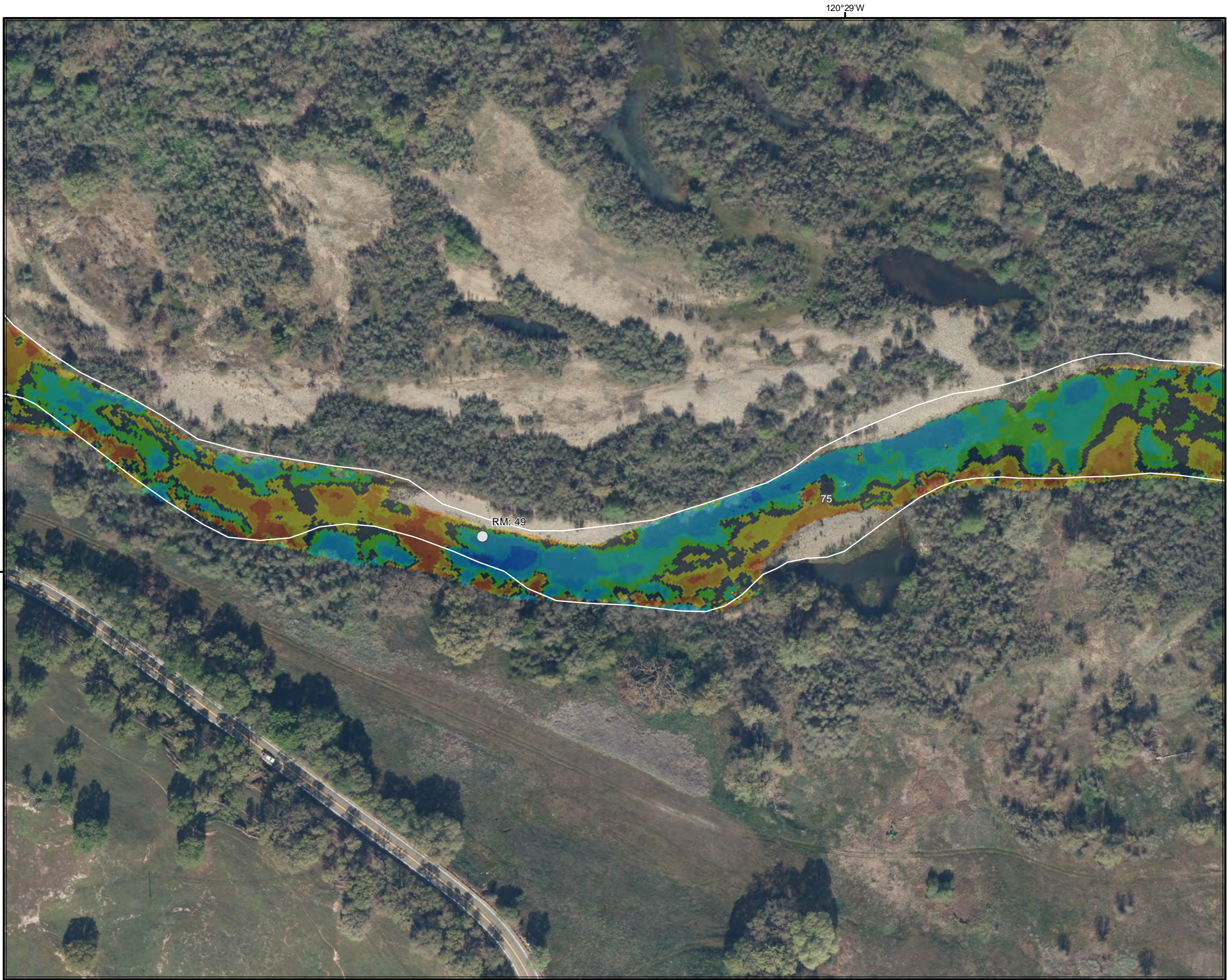


Attachment A

Don Pedro Project (FERC No.2299)

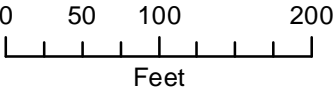
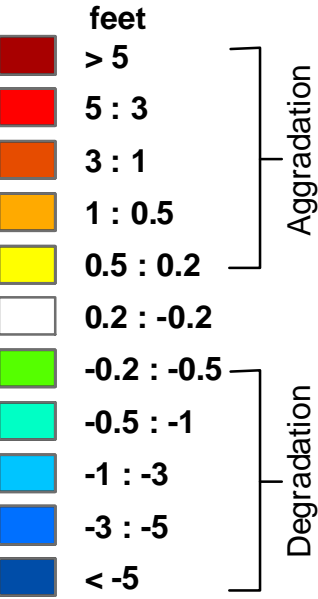
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2005 - 2012  
Surface Difference

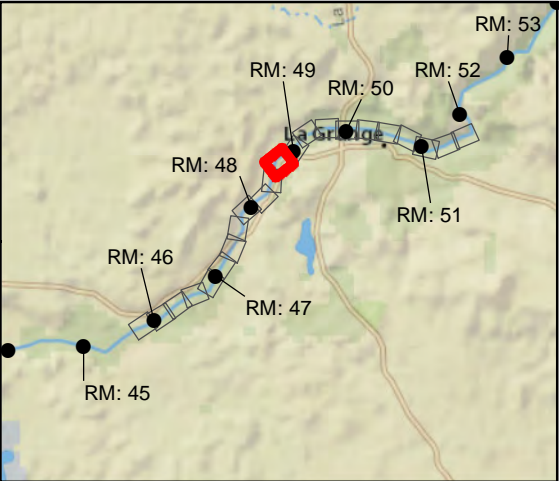


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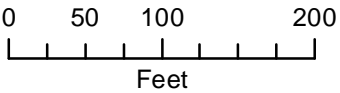
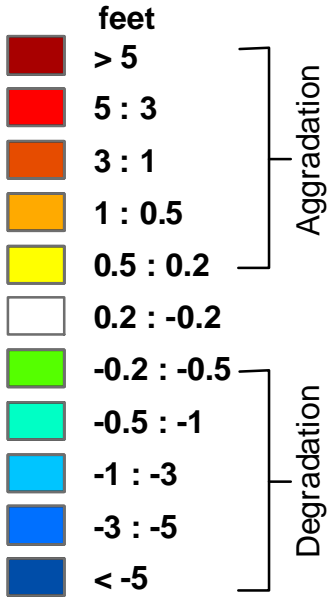
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2005 - 2012  
Surface Difference

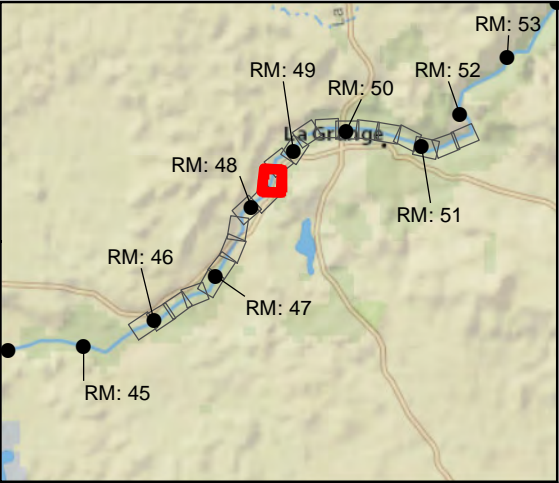
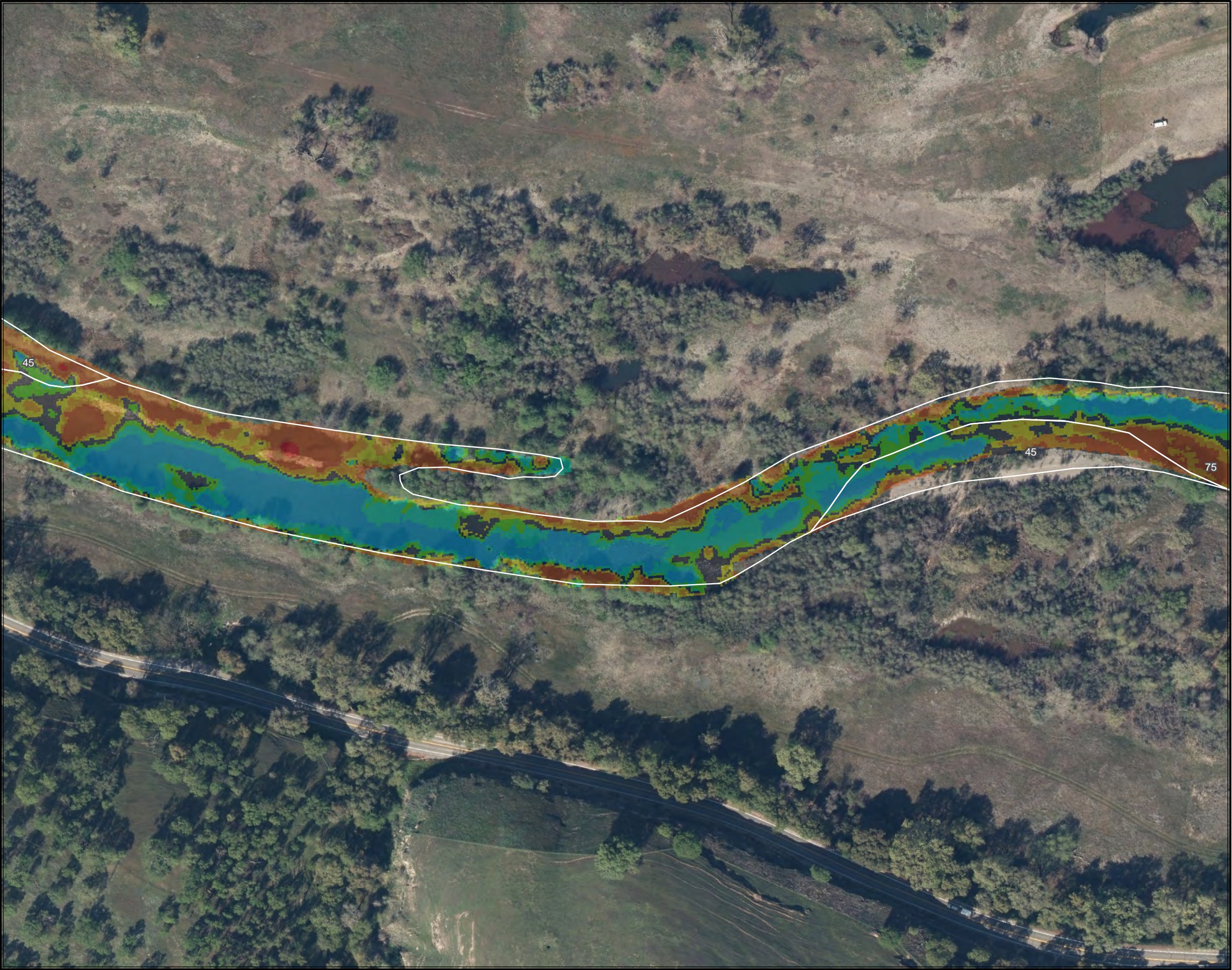


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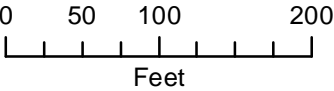


Page 12 of 22

- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- | feet        |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |

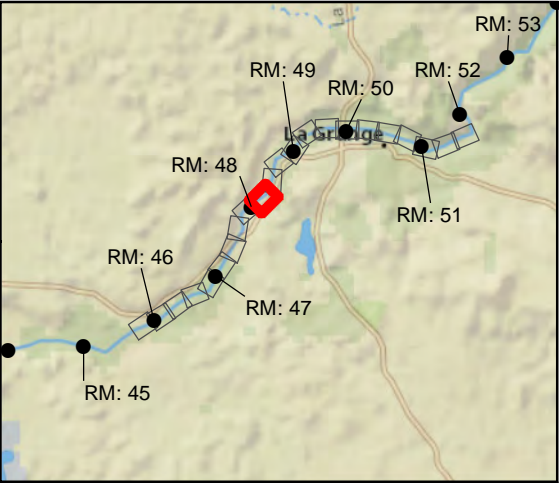
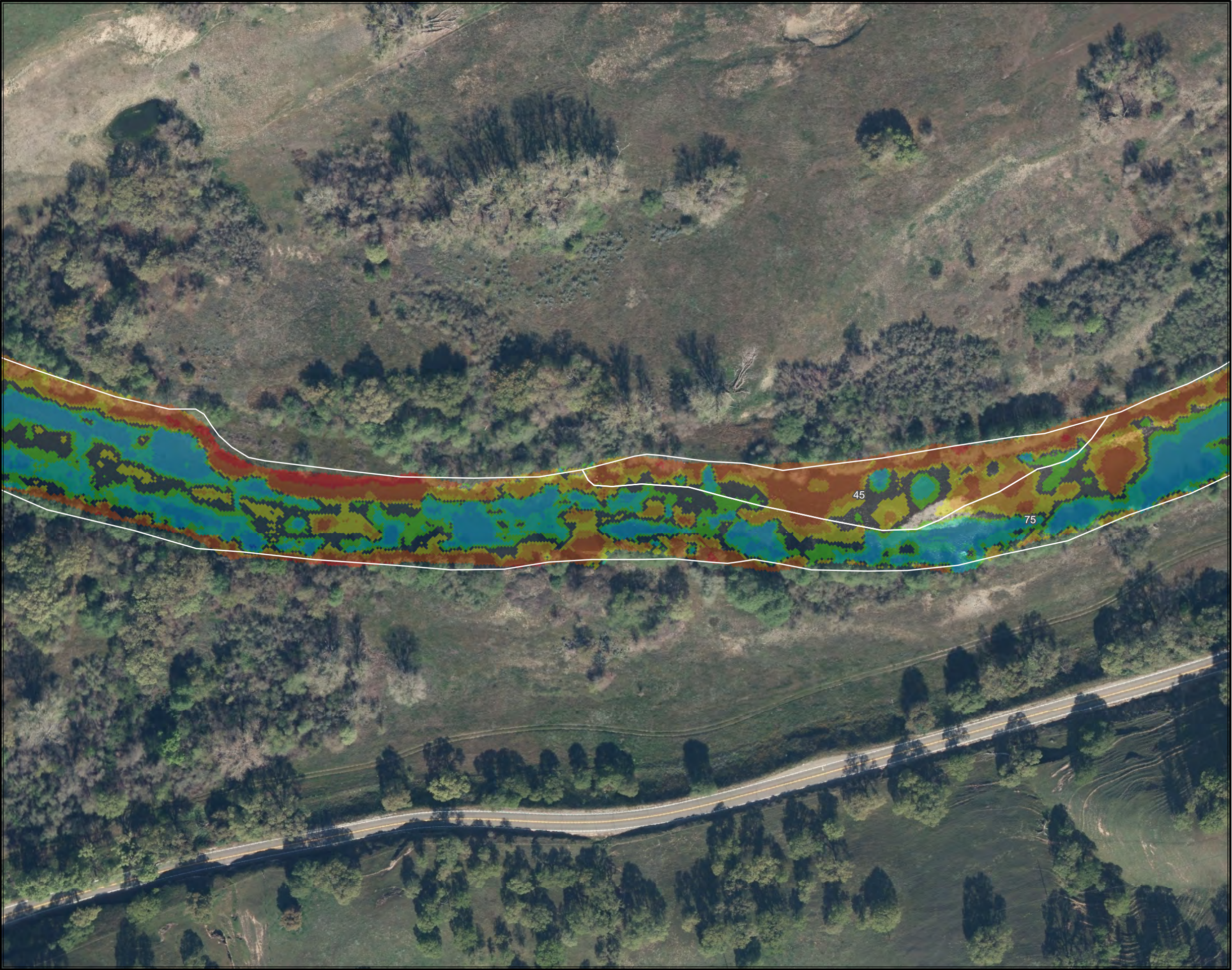


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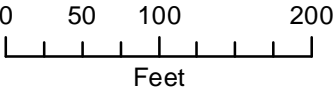


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- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
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2005 - 2012  
Surface Difference

- feet
- |             |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
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| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |

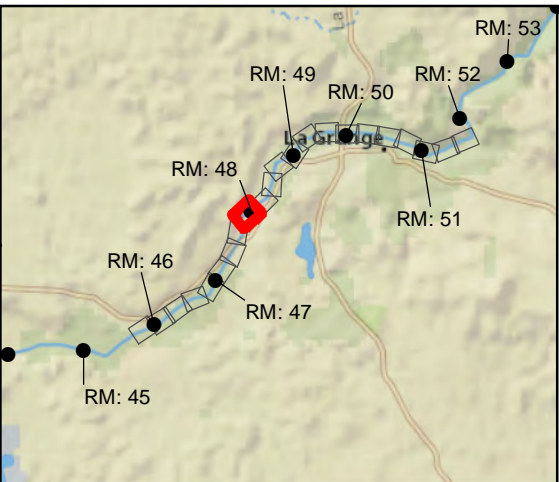
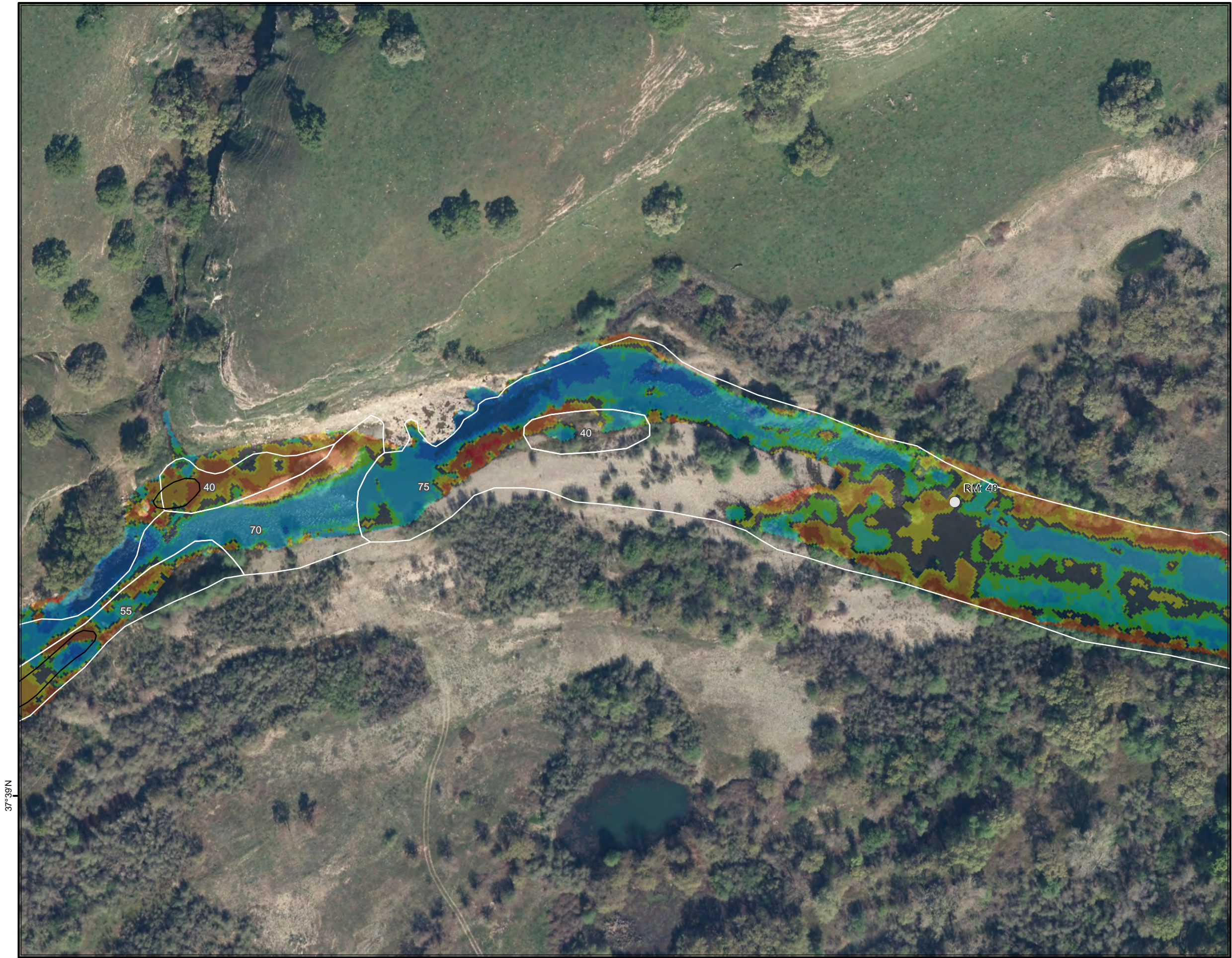


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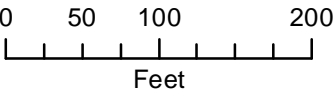




- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- feet
- |             |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |

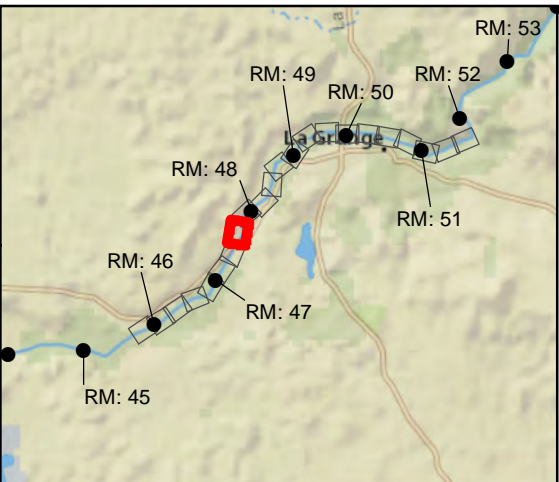
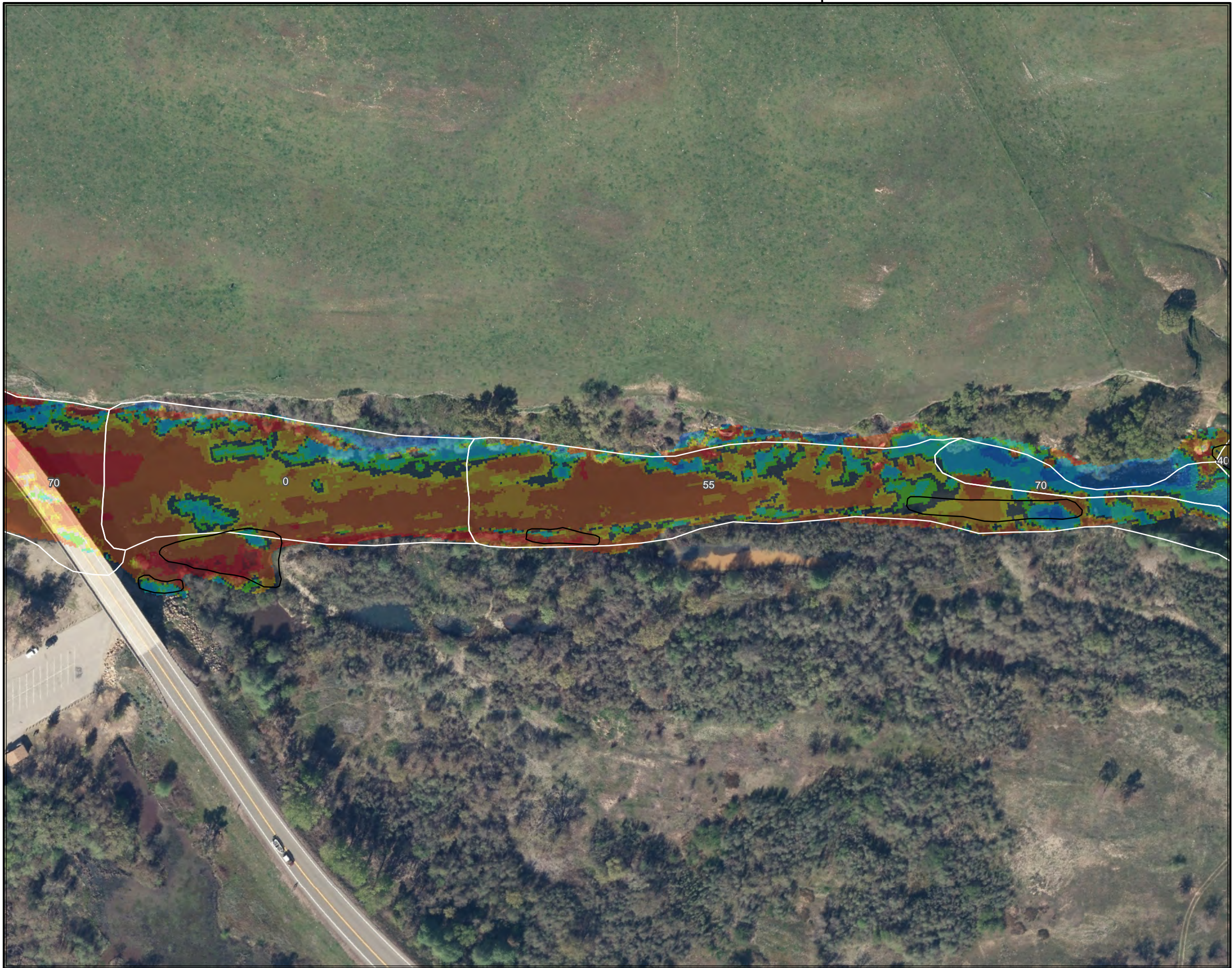


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Don Pedro Project (FERC No.2299)

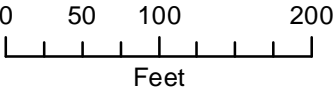
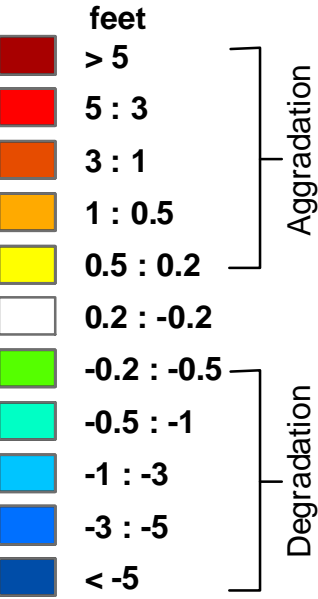
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- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

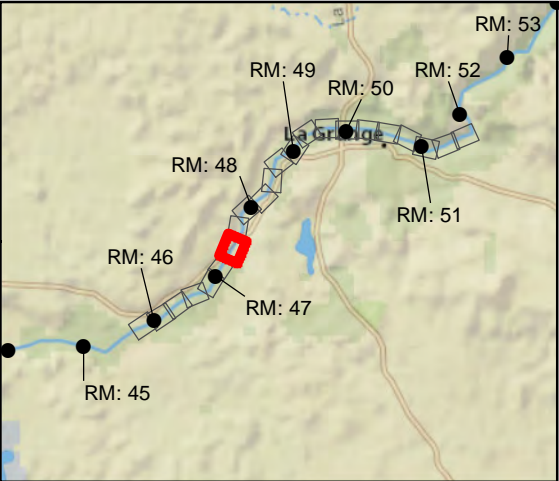
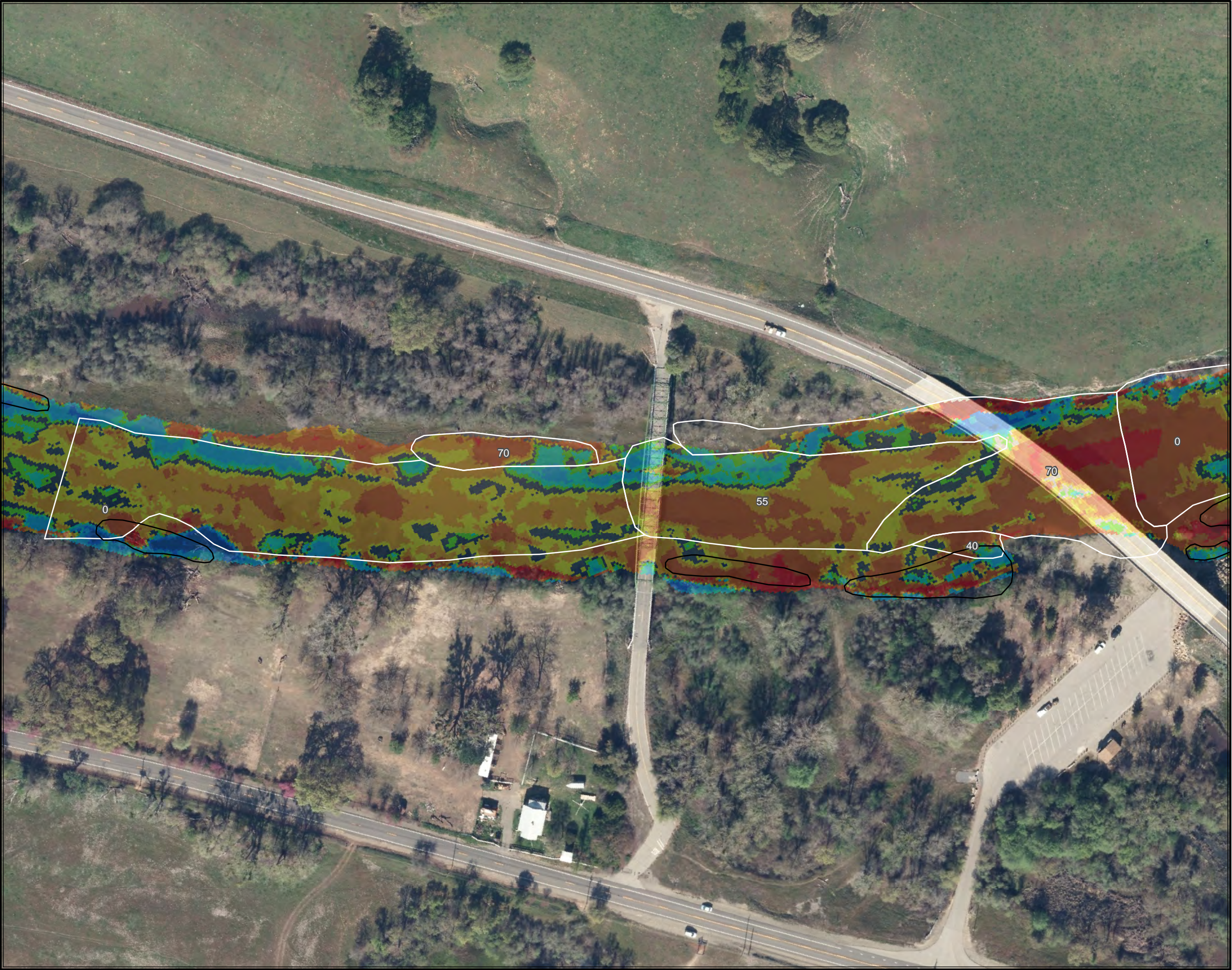


Attachment A

Don Pedro Project (FERC No.2299)

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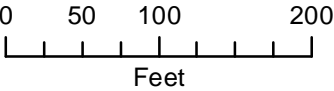


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- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- feet
- |             |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |



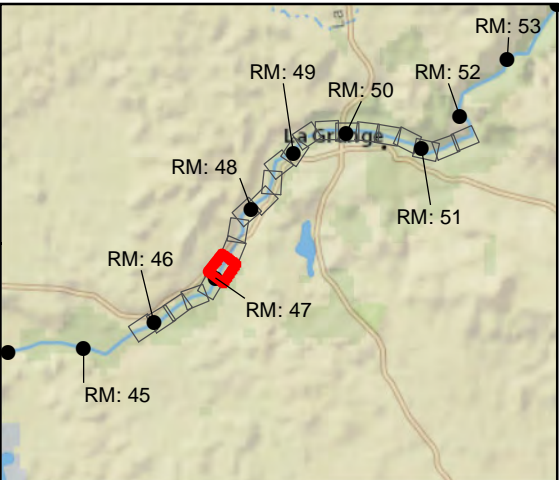
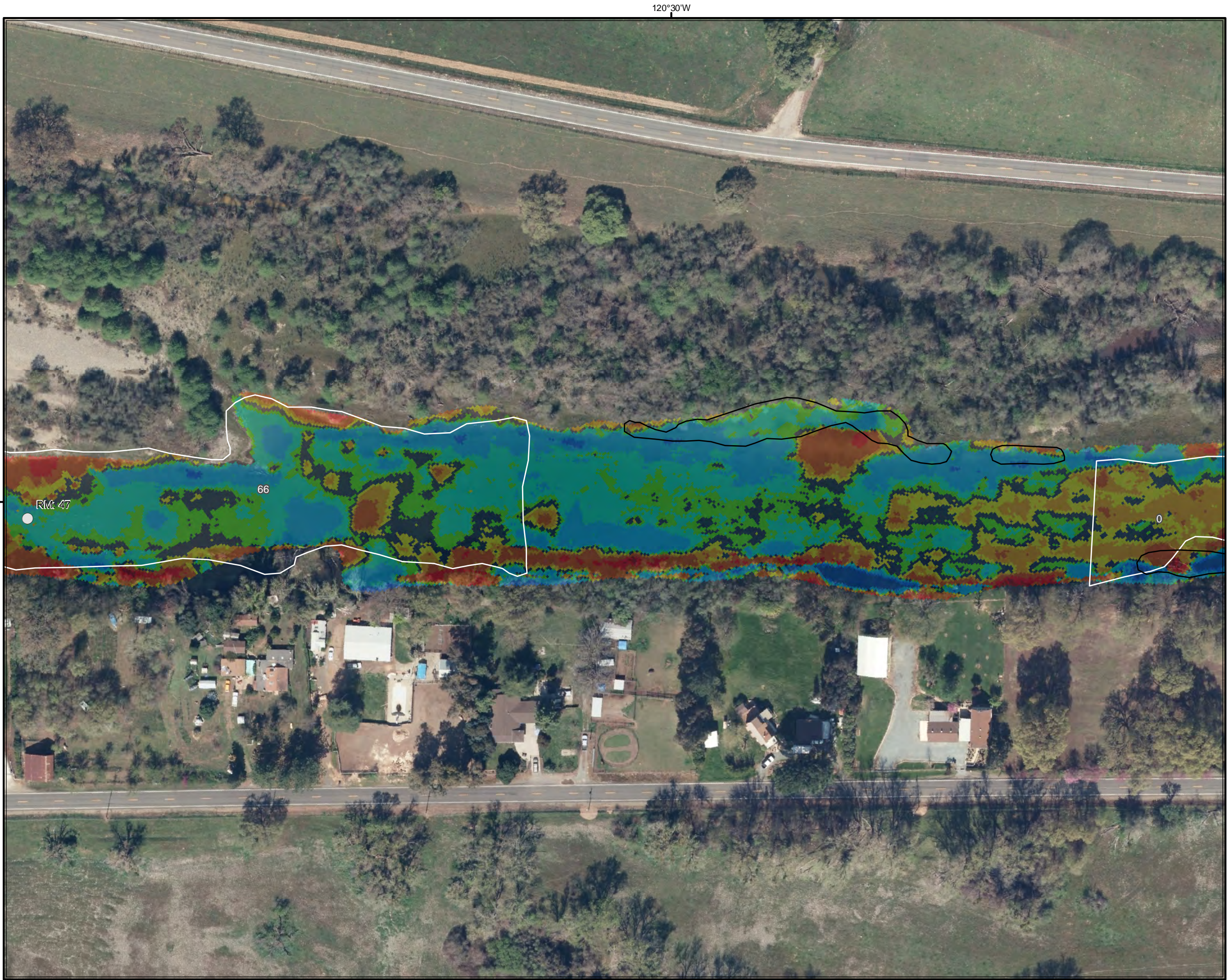
### Attachment A

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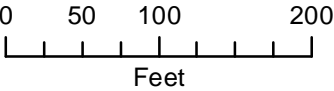
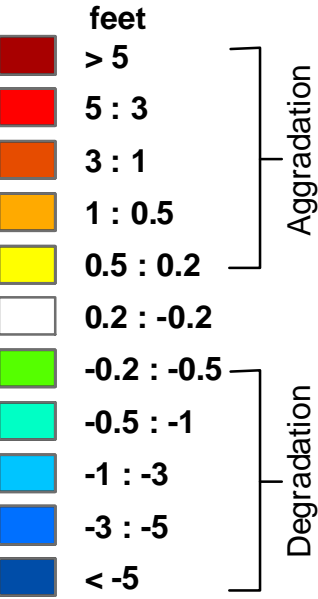




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- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference



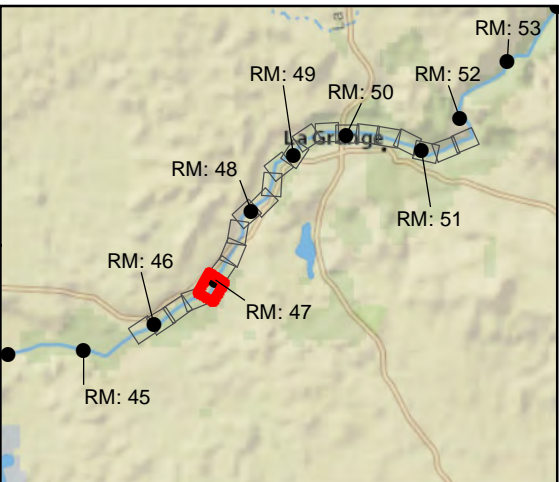
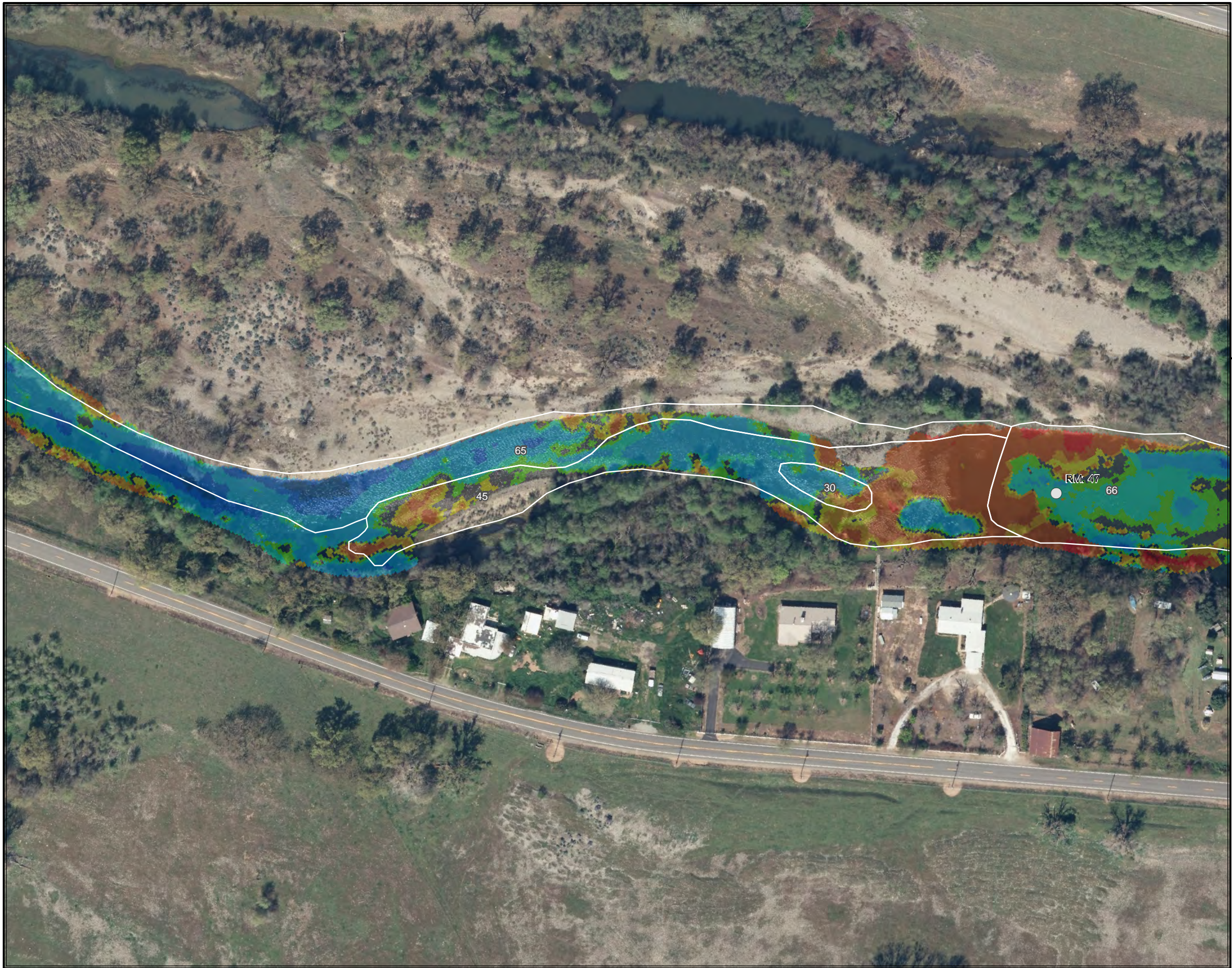
Attachment A

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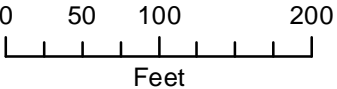




- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- feet
- |             |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |

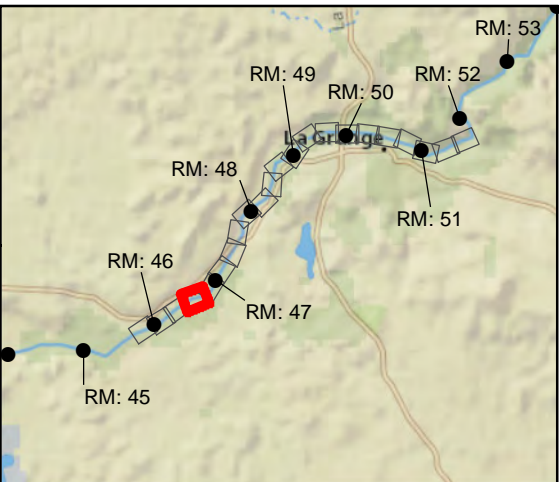
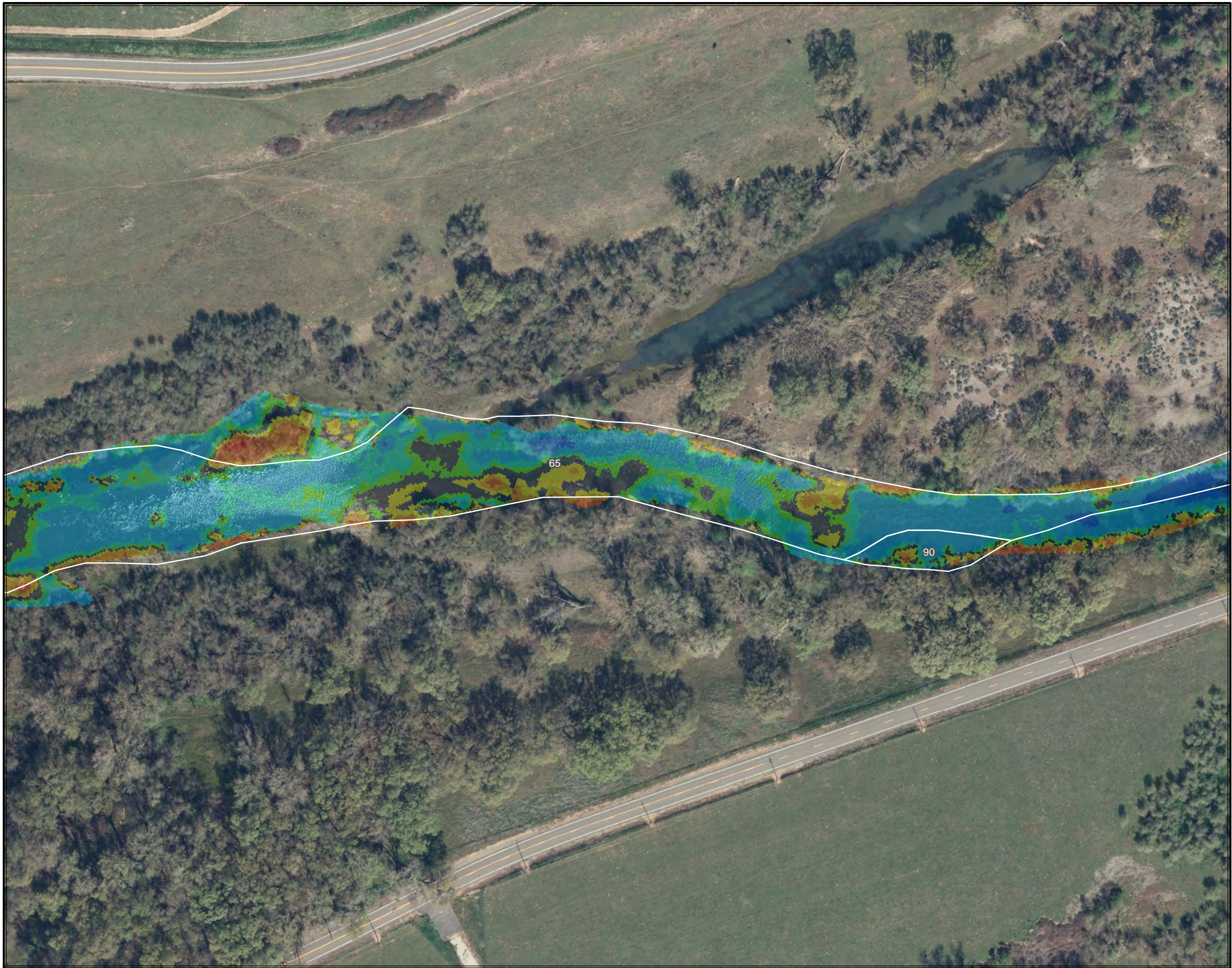


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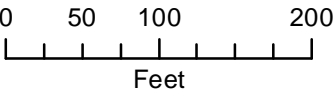


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- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- | feet        |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |

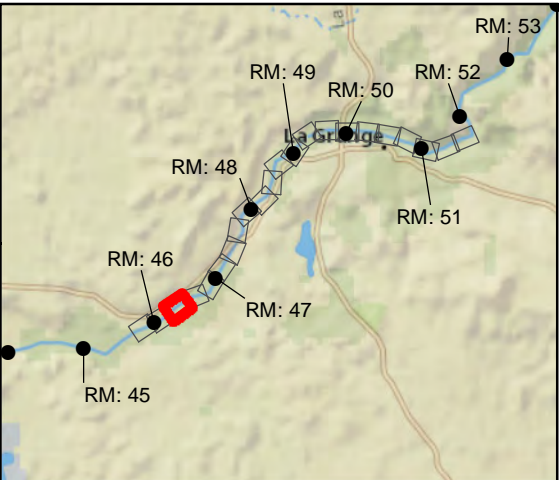
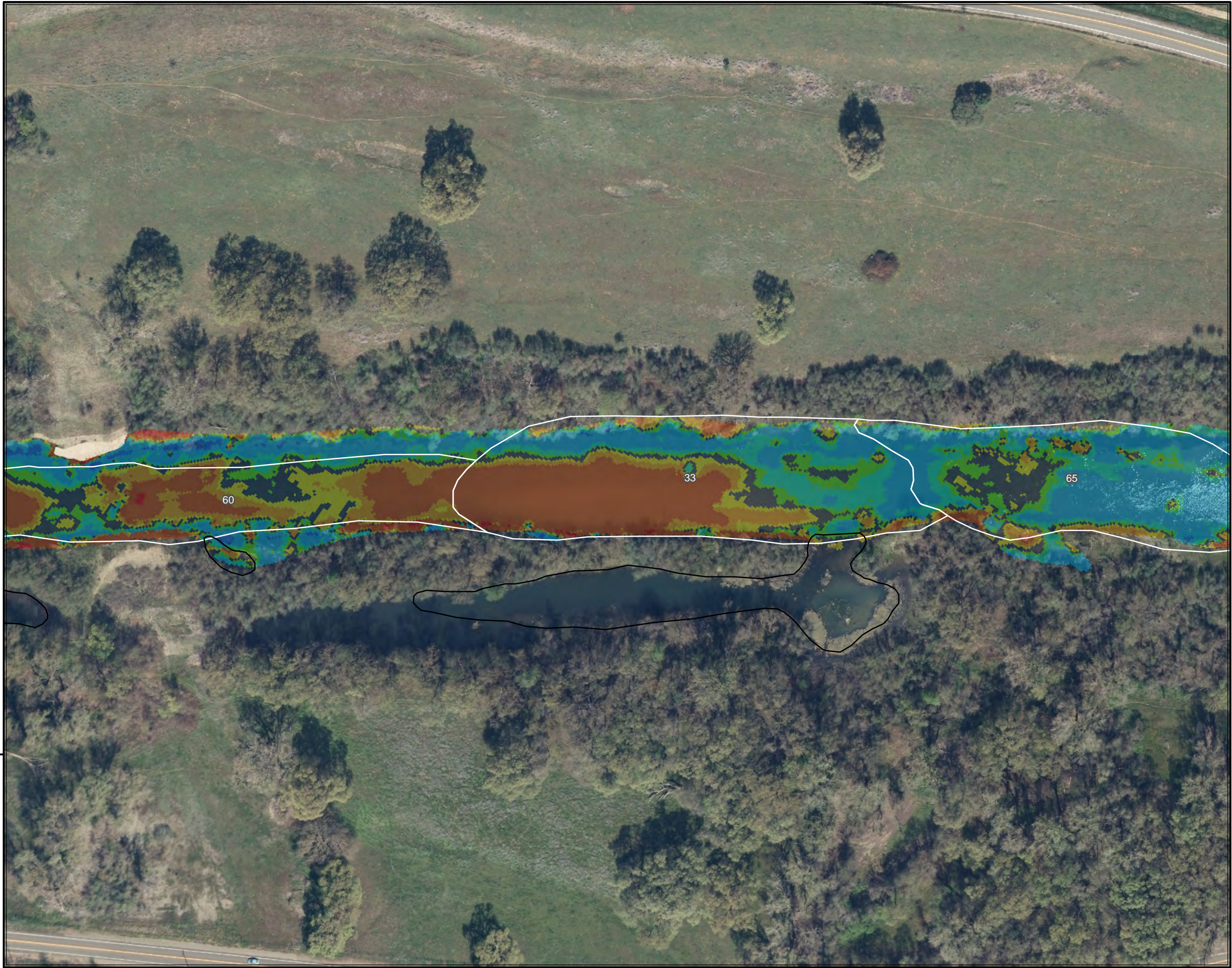


**Attachment A**

Don Pedro Project (FERC No.2299)

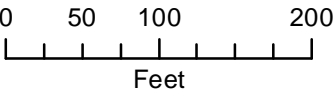
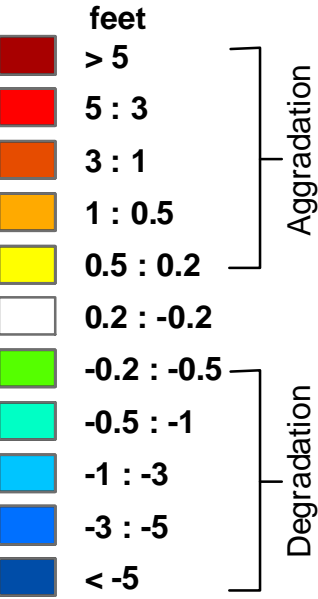
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- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

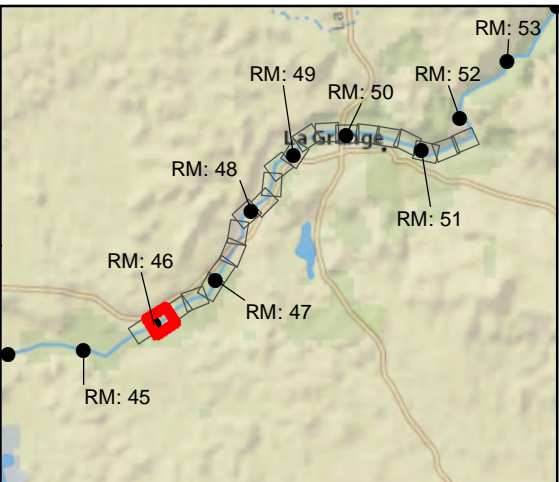
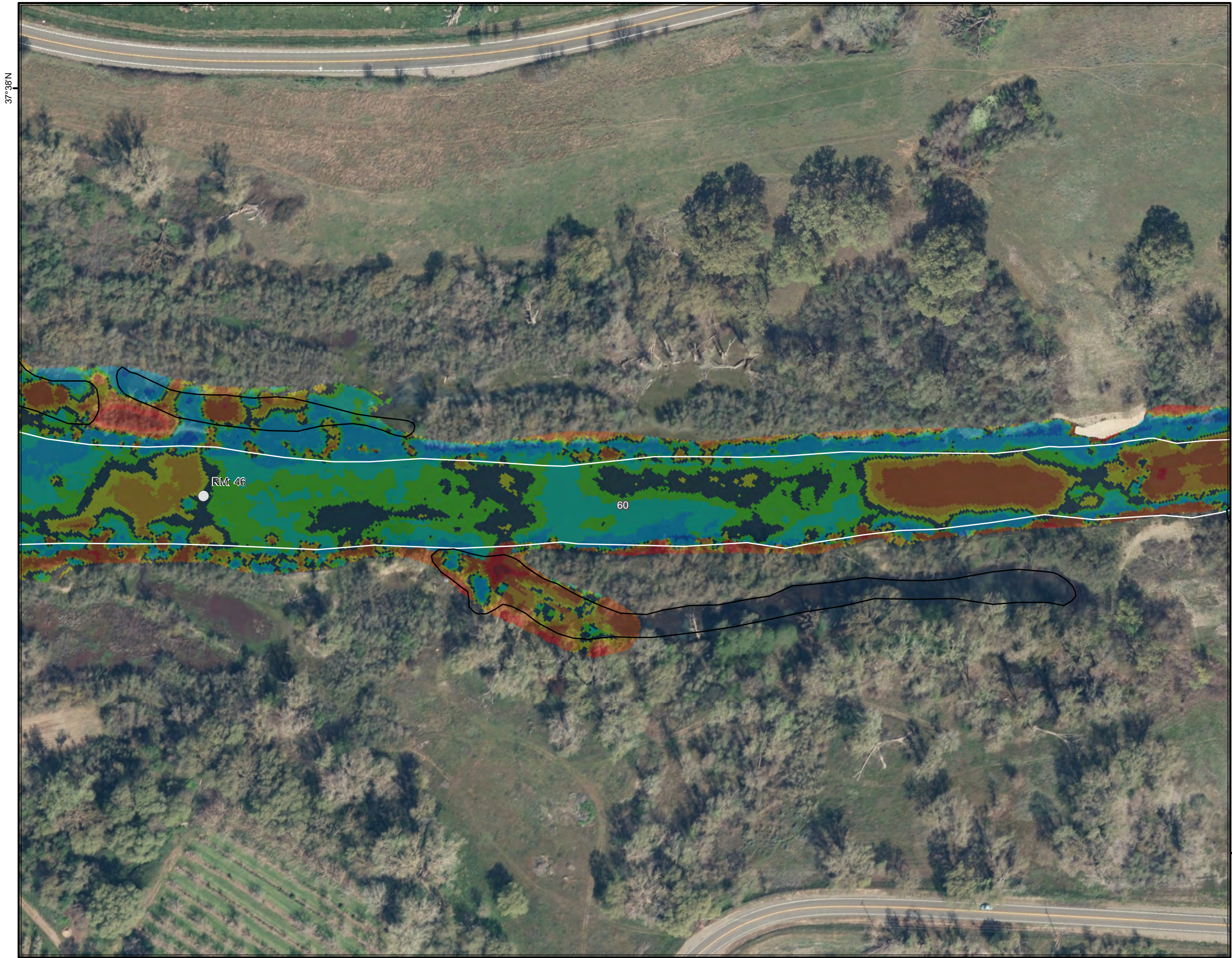


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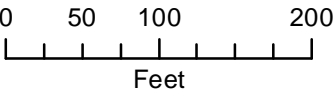


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- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
- CDFG Phase II Augmentation Sites w/ location ID label

2005 - 2012  
Surface Difference

- feet
- |             |             |
|-------------|-------------|
| > 5         | Aggradation |
| 5 : 3       |             |
| 3 : 1       |             |
| 1 : 0.5     |             |
| 0.5 : 0.2   |             |
| 0.2 : -0.2  |             |
| -0.2 : -0.5 | Degradation |
| -0.5 : -1   |             |
| -1 : -3     |             |
| -3 : -5     |             |
| < -5        |             |



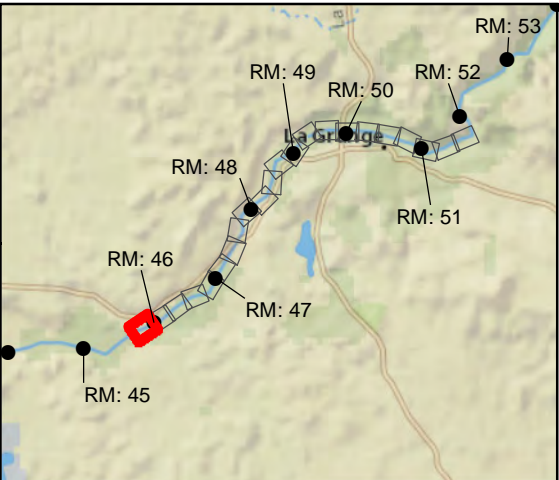
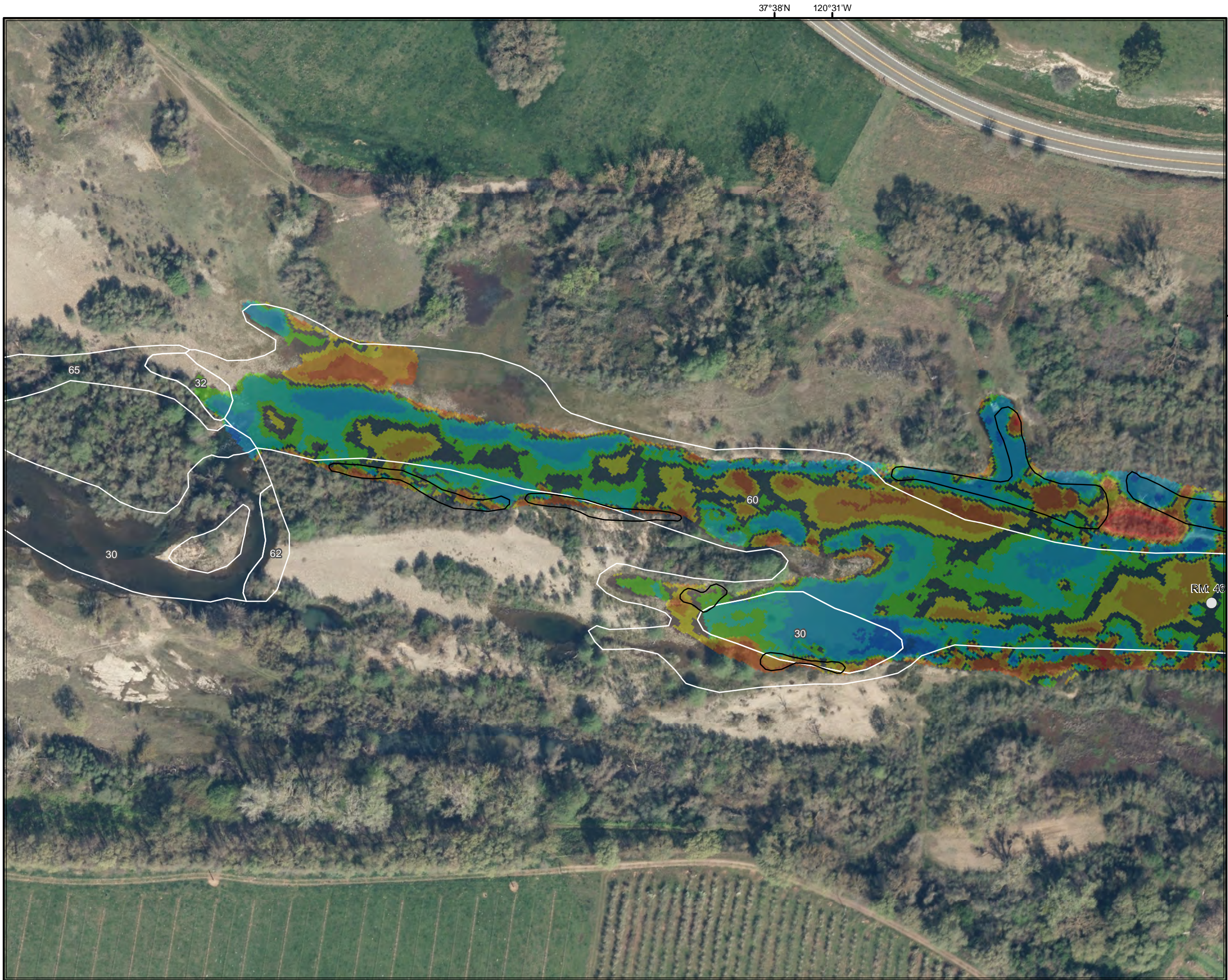
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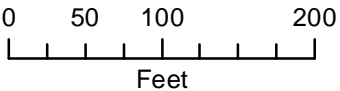


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- USGS River Mile
- Discrete FBM Deposit
- Spawning Gravel Deposit w/ D<sub>50</sub> label (mm)
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2005 - 2012  
Surface Difference

- feet
- > 5
  - 5 : 3
  - 3 : 1
  - 1 : 0.5
  - 0.5 : 0.2
  - 0.2 : -0.2
  - 0.2 : -0.5
  - 0.5 : -1
  - 1 : -3
  - 3 : -5
  - < -5
- Aggradation
- Degradation



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