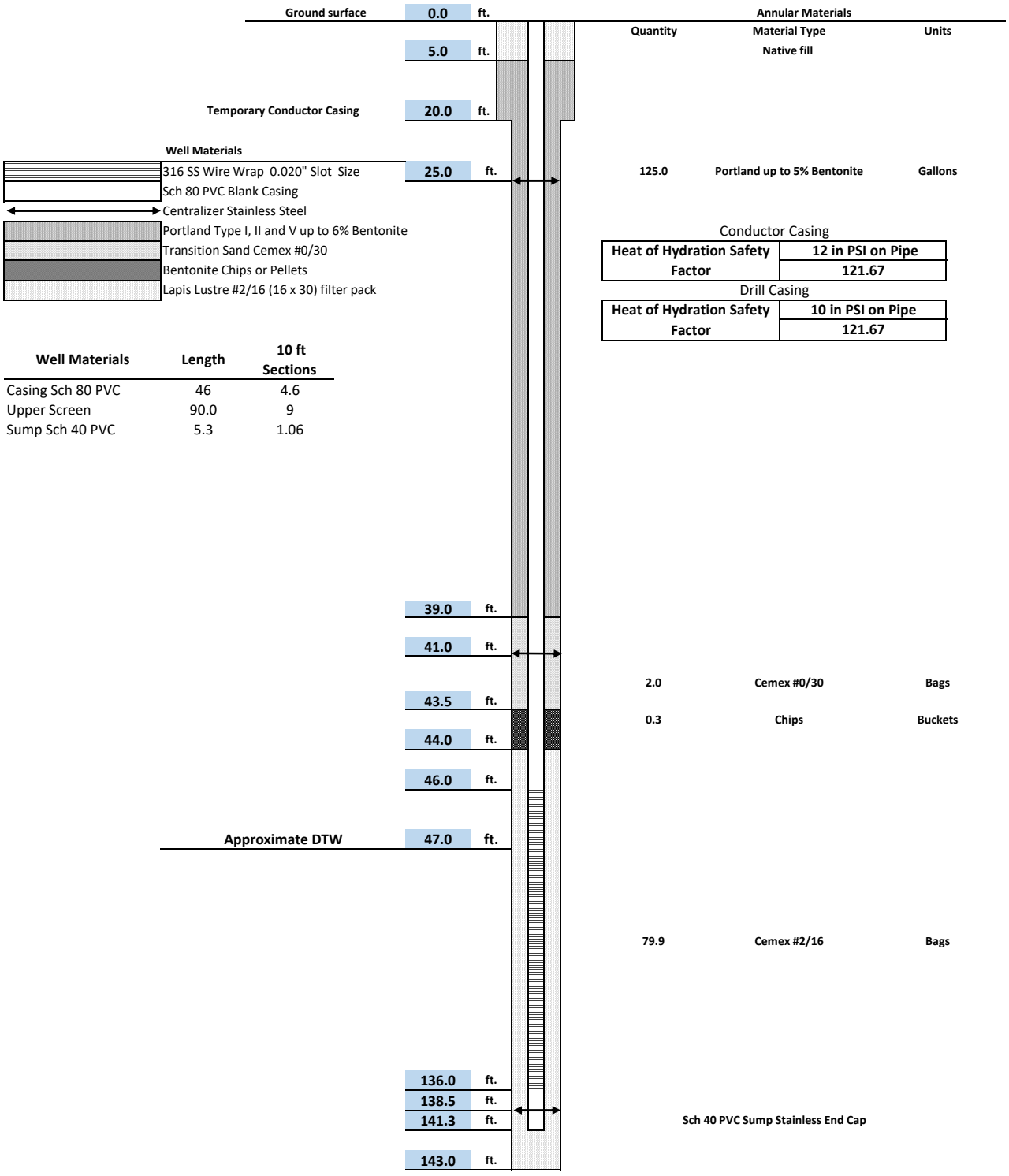
# ER-01 Final Well Design 4/20/22

| | | | |
|---|---|---|---|
| **Conductor casing Dia:** | 12 | **Well Casing Outer Diameter:** | 6.5 |
| **Drill casing Dia:** | 10.75 | **Well Casing Inner Diameter:** | 6 |
| **Rathole Dia:** | | | |

**Surface Completion:**




**Annular Materials**

| Quantity | Material Type | Units |
|---|---|---|
| | Native fill | |
| 125.0 | Portland up to 5% Bentonite | Gallons |
| 2.0 | Cemex #0/30 | Bags |
| 0.3 | Chips | Buckets |
| 79.9 | Cemex #2/16 | Bags |

Sch 40 PVC Sump Stainless End Cap

Conductor Casing

| Heat of Hydration Safety Factor | 12 in PSI on Pipe |
|---|---|
| | 121.67 |

Drill Casing

| Heat of Hydration Safety Factor | 10 in PSI on Pipe |
|---|---|
| | 121.67 |

| Well Materials | Length | 10 ft Sections |
|---|---|---|
| Casing Sch 80 PVC | 46 | 4.6 |
| Upper Screen | 90.0 | 9 |
| Sump Sch 40 PVC | 5.3 | 1.06 |

# Well Construction Log

Sheet: 1 of 8

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 04/20/2022 | Surface Elevation: | 504.57 ft amsl | **Well ID:** | **ER-01** |
| Date Completed: | 05/10/2022 | Shallow Well Elevation: | 503.83 ft amsl | | |
| Drilling Co.: | ABC LIOVIN | Deep Well Elevation: | N/A | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2101089.85 | Project: | Final GW Remedy Phase 2A |
| Driller Name: | Eddie Ramos | Easting (NAD83): | 7616510.53 | Location: | PG&E Topock, Needles California |
| Drilling Asst: | J. Candelaria / F. Perez | Borehole Diameter: | 10-12 inches | | |
| Logger: | Grant Willford | Static Water Level: | See Log for Depths | Project Number: | 30126255 |
| Editor: | Sean McGrane | Development End Date: | 6/1/2022 | | |
| Total Depth: | 143.1 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up ☐ To Be Completed in Well Vault | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Construction Details | Calculated Material Volumes | Material Volumes Installed Note: percentages are the actual volume vs the calculated volume |
|---|---|---|---|---|---|---|---|
| 1 | No Groundwater Samples Collected | Alluvium Deposits | SM | | (0.0 - 1.0') Temporary Surface Completion; (0.0 - 20.0') 12" Diameter Borehole | | (0.0 - 1.0') 7 bags Note: 2.5 x 2.5 ft. concrete pad with 18 inch diameter lockable vault, High Sped 4,500 PSI Concrete. Note: Cemex #2/16 Lapis Lustre Sand extended into skirt of vault. |
| 2 | | | | | (1.0 - 2.0') Cemex #2/16 (16x30) Lapis Lustre Sand | | |
| 3 | | Alluvium Deposits | SM | | (0.7 - 45.3') 6" Sch. 80 PVC Casing | | Note: Native material used to back fill was from the SPY. |
| 4 | | | | | (2.0 - 5.7') Native Material | | |
| 5 | | | | | | | |
| 6 | | | NR | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | Weathered Bedrock - conglomerate | N/A | | (5.7 - 39.0') Portland Cement 5% Bentonite Type I, II, and V with Hydrogel | (5.7 - 39.0') 116.1 Gallons | (5.7 - 39.0') 150 Gallons (129%) Note: Used >20% of the calculated volume due to potential voids that formed during drilling. |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |

Final 10/12/22

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steal, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) static water measured post development and approximate static measured during drilling, respectively.

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# Well Construction Log

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Sheet: 2 of 8

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 04/20/2022 | Surface Elevation: | 504.57 ft amsl | **Well ID: ER-01** | |
| Date Completed: | 05/10/2022 | Shallow Well Elevation: | 503.83 ft amsl | | |
| Drilling Co.: | ABC LIOVIN | Deep Well Elevation: | N/A | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2101089.85 | Project: | Final GW Remedy Phase 2A |
| Driller Name: | Eddie Ramos | Easting (NAD83): | 7616510.53 | Location: | PG&E Topock, Needles California |
| Drilling Asst: | J. Candelaria / F. Perez | Borehole Diameter: | 10-12 inches | | |
| Logger: | Grant Willford | Static Water Level: | See Log for Depths | Project Number: | 30126255 |
| Editor: | Sean McGrane | Development End Date: | 6/1/2022 | | |
| Total Depth: | 143.1 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up ☐ To Be Completed in Well Vault | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Construction Details | Calculated Material Volumes | Material Volumes Installed Note: percentages are the actual volume vs the calculated volume |
|---|---|---|---|---|---|---|---|
| 21 | | | | | (0.7 - 45.3') 6" Sch. 80 PVC Casing; (20.0 - 143.1') " Diameter Borehole | | |
| 22 | | | | | | | |
| 23 | | | | | | | |
| 24 | | | | | | | |
| 25 | | | | | (24.5 - 25.5') SS Centralizer | | |
| 26 | | | | | | | |
| 27 | | | | | | | |
| 28 | | Weathered Bedrock - conglomerate | N/A | | | | |
| 29 | | | | | (5.7 - 39.0') Portland Cement 5% Bentonite Type I, II, and V with Hydrogel | | |
| 30 | No Groundwater Samples Collected | | | | | (5.7 - 39.0') 116.1 Gallons | (5.7 - 39.0') 150 Gallons (129%) Note: Used >20% of the calculated volume due to potential voids that formed during drilling. |
| 31 | | | | | | | |
| 32 | | | | | | | |
| 33 | | | | | | | |
| 34 | | | | | | | |
| 35 | | | | | | | |
| 36 | | | | | | | |
| 37 | | Competent Bedrock - conglomerate | N/A | | | | |
| 38 | | | | | | | |
| 39 | | | | | | | |
| 40 | | | | | | (39.0 - 43.4') 3.5 bags | (39.0 - 43.4') 3 bags (86%) |

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steal, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) static water measured post development and approximate static measured during drilling, respectively.

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# Well Construction Log



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| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 04/20/2022 | Surface Elevation: | 504.57 ft amsl | **Well ID: ER-01** | |
| Date Completed: | 05/10/2022 | Shallow Well Elevation: | 503.83 ft amsl | | |
| Drilling Co.: | ABC LIOVIN | Deep Well Elevation: | N/A | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2101089.85 | Project: | Final GW Remedy Phase 2A |
| Driller Name: | Eddie Ramos | Easting (NAD83): | 7616510.53 | Location: | PG&E Topock, Needles California |
| Drilling Asst: | J. Candelaria / F. Perez | Borehole Diameter: | 10-12 inches | | |
| Logger: | Grant Willford | Static Water Level: | See Log for Depths | Project Number: | 30126255 |
| Editor: | Sean McGrane | Development End Date: | 6/1/2022 | | |
| Total Depth: | 143.1 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up ☐ To Be Completed in Well Vault | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Construction Details | Calculated Material Volumes | Material Volumes Installed Note: percentages are the actual volume vs the calculated volume |
|---|---|---|---|---|---|---|---|
| 41 | | | | | (0.7 - 45.3') 6" Sch. 80 PVC Casing | | |
| 42 | | | | | (40.5 - 41.5') SS Centralizer | | |
| 43 | | | | | (39.0 - 43.4') Cemex #0/30 (30x50) Lapis Lustre Sand | (39.0 - 43.4') 3.5 bags | (39.0 - 43.4') 3 bags (86%) |
| 44 | | | | | (43.4 - 44.0') Enviroplug Medium Chips | (43.4 - 44.0') 0.3 bags | (43.4 - 44.0') 0.5 bags (167%) Note: Hydrated bentonite with approximately 5 gallons of fresh water. Used >20% of the calculated volume due to potential voids that formed during drilling. |
| 45 | | | | | | | |
| 46 | | | | | (45.3 - 136.2') 6" 0.02-Slot 316L SS Wire Wrap Screen | | |
| 47 | | | | | | | |
| 48 | | Competent Bedrock - conglomerate | N/A | | | | |
| 49 | | | | | | | |
| 50 | No Groundwater Samples Collected | | | | | | |
| 51 | | | | | | | |
| 52 | | | | | (44.0 - 143.1') Cemex #2/16 (16x30) Lapis Lustre Sand | (44.0 - 143.1') 79.9 bags | (44.0 - 143.1') 85.5 bags (107%) Note: Filter pack swabbed for approximately 5 minutes in 20 ft. lifts for a total of approximately 20 minutes prior to the installation of the well seal. |
| 53 | | | | | | | |
| 54 | | | | | | | |
| 55 | | | | | | | |
| 56 | | | | | | | |
| 57 | | | | | | | |
| 58 | | Weathered Bedrock - conglomerate | N/A | | | | |
| 59 | | | | | | | |
| 60 | | | | | | | |

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# Well Construction Log

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| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 04/20/2022 | Surface Elevation: | 504.57 ft amsl | **Well ID:** | **ER-01** |
| Date Completed: | 05/10/2022 | Shallow Well Elevation: | 503.83 ft amsl | | |
| Drilling Co.: | ABC LIOVIN | Deep Well Elevation: | N/A | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2101089.85 | Project: | Final GW Remedy Phase 2A |
| Driller Name: | Eddie Ramos | Easting (NAD83): | 7616510.53 | Location: | PG&E Topock, Needles California |
| Drilling Asst: | J. Candelaria / F. Perez | Borehole Diameter: | 10-12 inches | | |
| Logger: | Grant Willford | Static Water Level: | See Log for Depths | Project Number: | 30126255 |
| Editor: | Sean McGrane | Development End Date: | 6/1/2022 | | |
| Total Depth: | 143.1 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up ☐ To Be Completed in Well Vault | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Construction Details | Calculated Material Volumes | Material Volumes Installed Note: percentages are the actual volume vs the calculated volume |
|---|---|---|---|---|---|---|---|
| 61 | | | | | (45.3 - 136.2') 6" 0.02-Slot 316L SS Wire Wrap Screen | | |
| 62 | | | | | | | |
| 63 | | | | | | | |
| 64 | | | | | | | |
| 65 | | | | | | | |
| 66 | | | | | | | |
| 67 | | Weathered Bedrock - conglomerate | N/A | | | | |
| 68 | | | | | | | |
| 69 | | | | | | | |
| 70 | No Groundwater Samples Collected | | | | (44.0 - 143.1') Cemex #2/16 (16x30) Lapis Lustre Sand | (44.0 - 143.1') 79.9 bags | (44.0 - 143.1') 85.5 bags (107%) Note: Filter pack swabbed for approximately 5 minutes in 20 ft. lifts for a total of approximately 20 minutes prior to the installation of the well seal. |
| 71 | | | | | | | |
| 72 | | | | | | | |
| 73 | | | | | | | |
| 74 | | | | | | | |
| 75 | | Competent Bedrock - conglomerate | N/A | | | | |
| 76 | | | | | | | |
| 77 | | | | | | | |
| 78 | | | | | | | |
| 79 | | | | | | | |
| 80 | | | | | | | |

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# Well Construction Log

Sheet: 5 of 8

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 04/20/2022 | Surface Elevation: | 504.57 ft amsl | **Well ID: ER-01** | |
| Date Completed: | 05/10/2022 | Shallow Well Elevation: | 503.83 ft amsl | | |
| Drilling Co.: | ABC LIOVIN | Deep Well Elevation: | N/A | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2101089.85 | Project: | Final GW Remedy Phase 2A |
| Driller Name: | Eddie Ramos | Easting (NAD83): | 7616510.53 | Location: | PG&E Topock, Needles California |
| Drilling Asst: | J. Candelaria / F. Perez | Borehole Diameter: | 10-12 inches | | |
| Logger: | Grant Willford | Static Water Level: | See Log for Depths | Project Number: | 30126255 |
| Editor: | Sean McGrane | Development End Date: | 6/1/2022 | | |
| Total Depth: | 143.1 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up ☐ To Be Completed in Well Vault | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Construction Details | Calculated Material Volumes | Material Volumes Installed Note: percentages are the actual volume vs the calculated volume |
|---|---|---|---|---|---|---|---|
| 81 | No Groundwater Samples Collected | Competent Bedrock - conglomerate | N/A | | (45.3 - 136.2') 6" 0.02-Slot 316L SS Wire Wrap Screen | (44.0 - 143.1') 79.9 bags | (44.0 - 143.1') 85.5 bags (107%) Note: Filter pack swabbed for approximately 5 minutes in 20 ft. lifts for a total of approximately 20 minutes prior to the installation of the well seal. |
| 82 | | Competent Bedrock - conglomerate | N/A | | | | |
| 83 | | | | | | | |
| 84 | | | | | | | |
| 85 | | | | | | | |
| 86 | | | | | | | |
| 87 | | | | | | | |
| 88 | | | | | | | |
| 89 | | | | | | | |
| 90 | | Competent Bedrock - conglomerate | N/A | | (44.0 - 143.1') Cemex #2/16 (16x30) Lapis Lustre Sand | | |
| 91 | | | | | | | |
| 92 | | | | | | | |
| 93 | | | | | | | |
| 94 | | | | | | | |
| 95 | | | | | | | |
| 96 | | | | | | | |
| 97 | | | | | | | |
| 98 | | | NR | | | | |
| 99 | | | | | | | |
| 100 | | | N/A | | | | |

Final 10/12/22

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steal, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) static water measured post development and approximate static measured during drilling, respectively.

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# Well Construction Log

Sheet: 6 of 8

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 04/20/2022 | Surface Elevation: | 504.57 ft amsl | **Well ID: ER-01** | |
| Date Completed: | 05/10/2022 | Shallow Well Elevation: | 503.83 ft amsl | | |
| Drilling Co.: | ABC LIOVIN | Deep Well Elevation: | N/A | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2101089.85 | Project: | Final GW Remedy Phase 2A |
| Driller Name: | Eddie Ramos | Easting (NAD83): | 7616510.53 | Location: | PG&E Topock, Needles California |
| Drilling Asst: | J. Candelaria / F. Perez | Borehole Diameter: | 10-12 inches | | |
| Logger: | Grant Willford | Static Water Level: | See Log for Depths | Project Number: | 30126255 |
| Editor: | Sean McGrane | Development End Date: | 6/1/2022 | | |
| Total Depth: | 143.1 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up ☐ To Be Completed in Well Vault | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Construction Details | Calculated Material Volumes | Material Volumes Installed Note: percentages are the actual volume vs the calculated volume |
|---|---|---|---|---|---|---|---|
| 101 | | | | | (45.3 - 136.2') 6" 0.02-Slot 316L SS Wire Wrap Screen | | |
| 102 | | | | | | | |
| 103 | | | | | | | |
| 104 | | | | | | | |
| 105 | | | | | | | |
| 106 | | | | | | | |
| 107 | | | | | | | |
| 108 | | | | | | | |
| 109 | | | | | | | |
| 110 | No Groundwater Samples Collected | Competent Bedrock - conglomerate | N/A | | (44.0 - 143.1') Cemex #2/16 (16x30) Lapis Lustre Sand | (44.0 - 143.1') 79.9 bags | (44.0 - 143.1') 85.5 bags (107%) Note: Filter pack swabbed for approximately 5 minutes in 20 ft. lifts for a total of approximately 20 minutes prior to the installation of the well seal. |
| 111 | | | | | | | |
| 112 | | | | | | | |
| 113 | | | | | | | |
| 114 | | | | | | | |
| 115 | | | | | | | |
| 116 | | | | | | | |
| 117 | | | | | | | |
| 118 | | | | | | | |
| 119 | | | | | | | |
| 120 | | | | | | | |

Final 10/12/22

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# Well Construction Log

Sheet: 7 of 8

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 04/20/2022 | Surface Elevation: | 504.57 ft amsl | **Well ID: ER-01** | |
| Date Completed: | 05/10/2022 | Shallow Well Elevation: | 503.83 ft amsl | | |
| Drilling Co.: | ABC LIOVIN | Deep Well Elevation: | N/A | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2101089.85 | Project: | Final GW Remedy Phase 2A |
| Driller Name: | Eddie Ramos | Easting (NAD83): | 7616510.53 | Location: | PG&E Topock, Needles California |
| Drilling Asst: | J. Candelaria / F. Perez | Borehole Diameter: | 10-12 inches | | |
| Logger: | Grant Willford | Static Water Level: | See Log for Depths | Project Number: | 30126255 |
| Editor: | Sean McGrane | Development End Date: | 6/1/2022 | | |
| Total Depth: | 143.1 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up ☐ To Be Completed in Well Vault | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Construction Details | Calculated Material Volumes | Material Volumes Installed Note: percentages are the actual volume vs the calculated volume |
|---|---|---|---|---|---|---|---|
| 121 | | | | | (45.3 - 136.2') 6" 0.02-Slot 316L SS Wire Wrap Screen | | |
| 122 | | | | | | | |
| 123 | | | | | | | |
| 124 | | | | | | | |
| 125 | | | | | | | |
| 126 | | | | | | | |
| 127 | | | | | | | |
| 128 | | | | | | | |
| 129 | | | | | | | |
| 130 | No Groundwater Samples Collected | Competent Bedrock - conglomerate | N/A | | (44.0 - 143.1') Cemex #2/16 (16x30) Lapis Lustre Sand | (44.0 - 143.1') 79.9 bags | (44.0 - 143.1') 85.5 bags (107%) Note: Filter pack swabbed for approximately 5 minutes in 20 ft. lifts for a total of approximately 20 minutes prior to the installation of the well seal. |
| 131 | | | | | | | |
| 132 | | | | | | | |
| 133 | | | | | | | |
| 134 | | | | | | | |
| 135 | | | | | | | |
| 136 | | | | | | | |
| 137 | | | | | (136.2 - 141.6') 6" Sch 40 PVC Sump and SS End Cap | | |
| 138 | | | | | | | |
| 139 | | | | | (138.0 - 139.0') SS Centralizer | | |
| 140 | | | | | | | |

Final 10/12/22

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# Well Construction Log

Sheet: 8 of 8

ARCADIS

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 04/20/2022 | Surface Elevation: | 504.57 ft amsl | **Well ID: ER-01** | |
| Date Completed: | 05/10/2022 | Shallow Well Elevation: | 503.83 ft amsl | | |
| Drilling Co.: | ABC LIOVIN | Deep Well Elevation: | N/A | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Northing (NAD83): | 2101089.85 | Project: | Final GW Remedy Phase 2A |
| Driller Name: | Eddie Ramos | Easting (NAD83): | 7616510.53 | Location: | PG&E Topock, Needles California |
| Drilling Asst: | J. Candelaria / F. Perez | Borehole Diameter: | 10-12 inches | | |
| Logger: | Grant Willford | Static Water Level: | See Log for Depths | Project Number: | 30126255 |
| Editor: | Sean McGrane | Development End Date: | 6/1/2022 | | |
| Total Depth: | 143.1 ft bgs | Well Completion: | ☒ Flush ☐ Stick-up ☐ To Be Completed in Well Vault | | |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Construction Details | Calculated Material Volumes | Material Volumes Installed Note: percentages are the actual volume vs the calculated volume |
|---|---|---|---|---|---|---|---|
| 141–143 | No Groundwater Samples Collected | Competent Bedrock - conglomerate | N/A | | (44.0 - 143.1') Cemex #2/16 (16x30) Lapis Lustre Sand; (136.2 - 141.6') 6" Sch 40 PVC Sump and SS End Cap | (44.0 - 143.1') 79.9 bags | (44.0 - 143.1') 85.5 bags (107%) Note: Filter pack swabbed for approximately 5 minutes in 20 ft. lifts for a total of approximately 20 minutes prior to the installation of the well seal. |

Final 10/12/22

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steal, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) static water measured post development and approximate static measured during drilling, respectively.

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# Boring Log

ARCADIS

Sheet: 1 of 8

**Boring No.: ER-01**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/31/2022 | Surface Elevation: | 504.57 ft amsl | | |
| Date Completed: | 04/20/2022 | Northing (NAD83): | 2101089.85 | | |
| Drilling Co.: | ABC LIOVIN | Easting (NAD83): | 7616510.53 | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Total Depth: | 143.1 ft bgs | Project: | Final GW Remedy Phase 2A |
| Drill Rig Type: | Terra Sonic Truck Mount | Borehole Diameter: | 10-12 inches | Location: | PG&E Topock, Needles California |
| Driller Name: | Eddie Ramos | Depth to First Water: | 80.5 ft bgs | | |
| Drilling Asst: | J. Candelaria / F. Perez | Sampling Method: | 7 inch x 10 ft. Core Barrel | Project Number: | 30126255 |
| Logger: | Grant Willford | Sampling Interval: | Continuous | | |
| Editor: | Sean McGrane | Converted to Well: | ☒ Yes ☐ No | | |

| Depth (ft) | Recovery (ft) | Sieve Sample ID | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Soil Description | Drilling Notes | Drilling Fluid |
|---|---|---|---|---|---|---|---|---|---|
| 1–4 | 4.5 | No Sieve Samples Collected | No Groundwater Samples Collected | Alluvium Deposits | SM | | (0-2 ft) Silty sand with gravel (SM); reddish brown (5YR 5/4); very fine to coarse, angular to subround; little silt; little granules, angular to subround; little small cobbles, angular to subround; little small to very large pebbles, angular to subround; trace clay; poorly sorted; dry. | (0.0 - 4.5') Air-knifed for utility clearance refusal at approximately 4.5 ft bgs due to encountering bedrock. Logged from air-knife cuttings. | (0.0 - 4.5') No drilling fluid used |
| 2–4 | 4.5 | | | Alluvium Deposits | SM | | (2-4.5 ft) Silty sand with gravel (SM); reddish brown (5YR 5/4); very fine to very coarse, angular to subround; little small to very large pebbles, angular to subround; little small to large cobbles, angular to subround; little silt; little granules, angular to subround; trace clay; poorly sorted; dry; coarser grained composed of mixed lithology. | | |
| 5–7 | 0 | | | | NR | | (4.5-7 ft) No Recovery. | (4.5 - 20.0') Advancing 12 inch conductor casing 4.5-20 ft bgs<br>(5.0 - 7.0') Core fell out of core barrel into hopper. | (4.5 - 20.0') 600 gallons of water used; 500 gallons of water recovered; 100 gallons of water lost |
| 7–15 | 8 | | | Weathered Bedrock - conglomerate | N/A | | (7-36 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; highly weathered; hard; massive; some competent rock fragments observed, 1-2.5 inches in length; moderately to highly friable; dry; NOTE: Core sample appeared mostly pulverized drilling process. | (7.0 - 15.0') Rough drilling | |
| 15–17 | 2 | | | | | | | (15.0 - 17.0') Rough drilling | |
| 17–20 | 5 | | | | | | | (17.0 - 22.0') Very rough drilling | |

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered during drilling and approximate static measured during development, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

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# Boring Log

ARCADIS



**Boring No.: ER-01**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/31/2022 | Surface Elevation: | 504.57 ft amsl | | |
| Date Completed: | 04/20/2022 | Northing (NAD83): | 2101089.85 | | |
| Drilling Co.: | ABC LIOVIN | Easting (NAD83): | 7616510.53 | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Total Depth: | 143.1 ft bgs | Project: | Final GW Remedy Phase 2A |
| Drill Rig Type: | Terra Sonic Truck Mount | Borehole Diameter: | 10-12 inches | Location: | PG&E Topock, Needles California |
| Driller Name: | Eddie Ramos | Depth to First Water: | 80.5 ft bgs | | |
| Drilling Asst: | J. Candelaria / F. Perez | Sampling Method: | 7 inch x 10 ft. Core Barrel | Project Number: | 30126255 |
| Logger: | Grant Willford | Sampling Interval: | Continuous | | |
| Editor: | Sean McGrane | Converted to Well: | ☒ Yes ☐ No | | |

| Depth (ft) | Recovery (ft) | Sieve Sample ID | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Soil Description | Drilling Notes | Drilling Fluid |
|---|---|---|---|---|---|---|---|---|---|
| 21 | 5 | No Sieve Samples Collected | No Groundwater Samples Collected | Weathered Bedrock - conglomerate | N/A | | (7-36 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; highly weathered; hard; massive; some competent rock fragments observed, 1-2.5 inches in length; moderately to highly friable; dry; NOTE: Core sample appeared mostly pulverized drilling process. | | |
| 22 | | | | | | | | | |
| 23 | 5 | | | | | | (22 ft) Observed some competent rock fragments within the mostly friable conglomerate. | (22.0 - 27.0') Very rough drilling | (22.0 - 27.0') No drilling fluid used |
| 24 | | | | | | | | | |
| 25 | | | | | | | | | |
| 26 | | | | | | | | | |
| 27 | | | | | | | | | |
| 28 | 5 | | | | | | | (27.0 - 32.0') Rough drilling | (27.0 - 32.0') No drilling fluid used |
| 29 | | | | | | | | | |
| 30 | | | | | | | | | |
| 31 | | | | | | | | (30.0') 10-inch diameter drill casing became locked up. Advanced 12-inch diameter conductor casing to free the 10-inch drill casing. | (30.0') No drilling fluid used |
| 32 | | | | | | | | | (32.0 - 36.0') No drilling fluid used |
| 33 | 5 | | | | | | | | |
| 34 | | | | | | | | (32.0 - 36.0') Rough drilling | |
| 35 | | | | | | | | | |
| 36 | | | | | | | | | |
| 37 | | | | Competent Bedrock - conglomerate | N/A | | (36-57 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; hard; massive; some competent rock fragments observed, 1 to 3 inches in length; less friable and more difficult to break; some friable rock fragments within the competent rock observed; dry; NOTE: Core sample appeared mostly pulverized drilling process. | (36.0 - 37.0') Very rough drilling; drill rate slowed significantly. | (36.0 - 37.0') No drilling fluid used |
| 38 | 5 | | | | | | | (37.0 - 42.0') Drilling conditions changed from rough to normal at discrete depths | (37.0 - 42.0') No drilling fluid used |
| 39 | | | | | | | | | |
| 40 | | | | | | | | | |

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered during drilling and approximate static measured during development, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

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# Boring Log

ARCADIS

Sheet: 3 of 8

**Boring No.: ER-01**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/31/2022 | Surface Elevation: | 504.57 ft amsl | | |
| Date Completed: | 04/20/2022 | Northing (NAD83): | 2101089.85 | | |
| Drilling Co.: | ABC LIOVIN | Easting (NAD83): | 7616510.53 | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Total Depth: | 143.1 ft bgs | Project: | Final GW Remedy Phase 2A |
| Drill Rig Type: | Terra Sonic Truck Mount | Borehole Diameter: | 10-12 inches | Location: | PG&E Topock, Needles California |
| Driller Name: | Eddie Ramos | Depth to First Water: | 80.5 ft bgs | | |
| Drilling Asst: | J. Candelaria / F. Perez | Sampling Method: | 7 inch x 10 ft. Core Barrel | Project Number: | 30126255 |
| Logger: | Grant Willford | Sampling Interval: | Continuous | | |
| Editor: | Sean McGrane | Converted to Well: | ☒ Yes ☐ No | | |

| Depth (ft) | Recovery (ft) | Sieve Sample ID | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Soil Description | Drilling Notes | Drilling Fluid |
|---|---|---|---|---|---|---|---|---|---|
| 41 | 5 | No Sieve Samples Collected | No Groundwater Samples Collected | Competent Bedrock - conglomerate | N/A | | (36-57 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; hard; massive; some competent rock fragments observed, 1 to 3 inches in length; less friable and more difficult to break; some friable rock fragments within the competent rock observed; dry; NOTE: Core sample appeared mostly pulverized drilling process. | throughout drill run. | |
| 42 | | | | | | | | | |
| 43 | 5 | | | | | | | (42.0 - 57.0') Normal drilling conditions; very rough drilling at discrete depths. | (42.0 - 57.0') No drilling fluid used |
| 44 | | | | | | | | | |
| 45 | | | | | | | | | |
| 46 | | | | | | | | | |
| 47 | | | | | | | | | |
| 48 | 4.5 | | | | | | | | |
| 49 | | | | | | | | | |
| 50 | | | | | | | | | |
| 51 | | | | | | | | | |
| 52 | | | | | | | | | |
| 53 | 5 | ER-1-SS-47-67 4/5/2022 11:38 | | | | | | | |
| 54 | | | | | | | | | |
| 55 | | | | | | | | | |
| 56 | | | | | | | | | |
| 57 | | | | | | | | | |
| 58 | 5 | | | Weathered Bedrock - conglomerate | N/A | | (57-74 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; highly weathered; hard; massive; some competent rock fragments observed, 1-2.5 inches in length; moderately to highly friable; dry; NOTE: Core sample appeared mostly pulverized drilling process. | (57.0 - 62.0') Smooth drilling | (57.0 - 62.0') No drilling fluid used |
| 59 | | | | | | | | | |
| 60 | | | | | | | | | |

Final 10/12/22

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered during drilling and approximate static measured during development, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

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# Boring Log

ARCADIS

Sheet: 4 of 8

**Boring No.: ER-01**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/31/2022 | Surface Elevation: | 504.57 ft amsl | | |
| Date Completed: | 04/20/2022 | Northing (NAD83): | 2101089.85 | | |
| Drilling Co.: | ABC LIOVIN | Easting (NAD83): | 7616510.53 | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Total Depth: | 143.1 ft bgs | Project: | Final GW Remedy Phase 2A |
| Drill Rig Type: | Terra Sonic Truck Mount | Borehole Diameter: | 10-12 inches | Location: | PG&E Topock, Needles California |
| Driller Name: | Eddie Ramos | Depth to First Water: | 80.5 ft bgs | | |
| Drilling Asst: | J. Candelaria / F. Perez | Sampling Method: | 7 inch x 10 ft. Core Barrel | Project Number: | 30126255 |
| Logger: | Grant Willford | Sampling Interval: | Continuous | | |
| Editor: | Sean McGrane | Converted to Well: | ☒ Yes ☐ No | | |

| Depth (ft) | Recovery (ft) | Sieve Sample ID | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Soil Description | Drilling Notes | Drilling Fluid |
|---|---|---|---|---|---|---|---|---|---|
| 61 | 5 | | No Groundwater Samples Collected | Weathered Bedrock - conglomerate | N/A | | (57-74 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; highly weathered; hard; massive; some competent rock fragments observed, 1-2.5 inches in length; moderately to highly friable; dry; NOTE: Core sample appeared mostly pulverized drilling process. | | |
| 62 | | | | | | | | (62.0 - 67.0') Smooth drilling | (62.0 - 67.0') No drilling fluid used |
| 63 | | ER-1-SS-47-67 4/5/2022 11:38 | | | | | | | |
| 64 | 5 | | | | | | | | |
| 65 | | | | | | | | | |
| 66 | | | | | | | | | |
| 67 | | | | | | | | (67.0 - 74.0') Smooth drilling | (67.0 - 74.0') No drilling fluid used |
| 68 | | | | | | | | | |
| 69 | | | | | | | | | |
| 70 | | | | | | | | | |
| 71 | 7 | | | | | | | | |
| 72 | | | | | | | | | |
| 73 | | ER-1-SS-67-87 4/5/2022 12:05 | | | | | | | |
| 74 | | | | | | | | (74.0 - 77.0') Rough drilling | (74.0 - 77.0') No drilling fluid used |
| 75 | | | | Competent Bedrock - conglomerate | N/A | | (74-81 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; massive; some competent rock fragments observed, 1-3 inches in length; difficult to break; some friable rock fragments within the competent rock observed; dry; NOTE: Core sample appeared mostly pulverized drilling process. | | |
| 76 | 3 | | | | | | | | |
| 77 | | | | | | | | (77.0 - 97.0') Rough drilling | (77.0 - 97.0') No drilling fluid used |
| 78 | | | | | | | | | |
| 79 | 5 | | | | | | | | |
| 80 | | | | | | | | | |

Final 10/12/22

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered during drilling and approximate static measured during development, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

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# Boring Log

ARCADIS

Sheet: 5 of 8

**Boring No.: ER-01**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/31/2022 | Surface Elevation: | 504.57 ft amsl | | |
| Date Completed: | 04/20/2022 | Northing (NAD83): | 2101089.85 | | |
| Drilling Co.: | ABC LIOVIN | Easting (NAD83): | 7616510.53 | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Total Depth: | 143.1 ft bgs | Project: | Final GW Remedy Phase 2A |
| Drill Rig Type: | Terra Sonic Truck Mount | Borehole Diameter: | 10-12 inches | Location: | PG&E Topock, Needles California |
| Driller Name: | Eddie Ramos | Depth to First Water: | 80.5 ft bgs | | |
| Drilling Asst: | J. Candelaria / F. Perez | Sampling Method: | 7 inch x 10 ft. Core Barrel | Project Number: | 30126255 |
| Logger: | Grant Willford | Sampling Interval: | Continuous | | |
| Editor: | Sean McGrane | Converted to Well: | ☒ Yes ☐ No | | |

| Depth (ft) | Recovery (ft) | Sieve Sample ID | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Soil Description | Drilling Notes | Drilling Fluid |
|---|---|---|---|---|---|---|---|---|---|
| 81 | 5 | | | Competent Bedrock - conglomerate | N/A | | (80.5 ft) Rock fragments are moist. | | |
| 82 | | | | Competent Bedrock - conglomerate | N/A | | (81-82.5 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; fresh; hard; massive; dry; NOTE: Solid rock core. | | |
| 83 | | ER-1-SS-67-87 4/5/2022 12:05 | | | | | | | |
| 84 | 5 | | | | | | (82.5-97 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; hard; massive; some competent rock fragments observed, 1-3 inches in length, difficult to break; some friable rock fragments within the competent rock observed; dry; NOTE: Core appeared sample mostly pulverized drilling process. | | |
| 85 | | | | | | | | | |
| 86 | | | | | | | | | |
| 87 | | | | | | | | | |
| 88 | | | | | | | | | |
| 89 | | | | | | | | | |
| 90 | 5 | | No Groundwater Samples Collected | Competent Bedrock - conglomerate | N/A | | | | |
| 91 | | | | | | | | | |
| 92 | | ER-1-SS-87-97 4/5/2022 12:58 | | | | | (92-97 ft) Conglomerate becoming more competent, increase in the size of the rock fragments 2-4 inches. | | |
| 93 | | | | | | | | | |
| 94 | | | | | | | | | |
| 95 | 5 | | | | | | | | |
| 96 | | | | | | | | | |
| 97 | | | | | | | | | |
| 98 | 2.5 | No Sieve Samples Collected | | | NR | | (97-99.5 ft) No Recovery. NOTE: See drilling notes. | (97.0 - 102.0') Top 2.5 ft of drill cuttings washed out of core barrel during extraction. | (97.0 - 102.0') No drilling fluid used |
| 99 | | | | | | | | | |
| 100 | | | | | N/A | | | | |

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered during drilling and approximate static measured during development, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

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# Boring Log

ARCADIS



**Boring No.: ER-01**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/31/2022 | Surface Elevation: | 504.57 ft amsl | | |
| Date Completed: | 04/20/2022 | Northing (NAD83): | 2101089.85 | | |
| Drilling Co.: | ABC LIOVIN | Easting (NAD83): | 7616510.53 | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Total Depth: | 143.1 ft bgs | Project: | Final GW Remedy Phase 2A |
| Drill Rig Type: | Terra Sonic Truck Mount | Borehole Diameter: | 10-12 inches | Location: | PG&E Topock, Needles California |
| Driller Name: | Eddie Ramos | Depth to First Water: | 80.5 ft bgs | | |
| Drilling Asst: | J. Candelaria / F. Perez | Sampling Method: | 7 inch x 10 ft. Core Barrel | Project Number: | 30126255 |
| Logger: | Grant Willford | Sampling Interval: | Continuous | | |
| Editor: | Sean McGrane | Converted to Well: | ☒ Yes ☐ No | | |

| Depth (ft) | Recovery (ft) | Sieve Sample ID | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Soil Description | Drilling Notes | Drilling Fluid |
|---|---|---|---|---|---|---|---|---|---|
| 101 | 2.5 | No Sieve Samples Collected | No Groundwater Samples Collected | Competent Bedrock - conglomerate | N/A | | (99.5-143.1 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; hard; massive; some competent rock fragments observed, 1-3 inches in length; difficult to break; some friable rock fragments within the competent rock observed; rock fragments moist to dry; NOTE: Core sample appeared mostly pulverized drilling process. | | |
| 102 | | | | | | | | (102.0 - 122.0') Relatively normal drilling, rough in discrete intervals. | (102.0 - 122.0') No drilling fluid used |
| 103 | | | | | | | | | |
| 104 | 3.5 | | | | | | | | |
| 105 | | | | | | | | | |
| 106 | | | | | | | | | |
| 107 | | | | | | | | | |
| 108 | 3.5 | | | | | | | | |
| 109 | | | | | | | | | |
| 110 | | | | | | | | | |
| 111 | | | | | | | | | |
| 112 | | | | | | | | | |
| 113 | 4 | | | | | | | | |
| 114 | | | | | | | | | |
| 115 | | | | | | | | | |
| 116 | | | | | | | | | |
| 117 | | | | | | | | | |
| 118 | 5 | | | | | | | | |
| 119 | | | | | | | | | |
| 120 | | | | | | | | | |

Final 10/12/22

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered during drilling and approximate static measured during development, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

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# Boring Log

ARCADIS

Sheet: 7 of 8

**Boring No.: ER-01**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/31/2022 | Surface Elevation: | 504.57 ft amsl | | |
| Date Completed: | 04/20/2022 | Northing (NAD83): | 2101089.85 | | |
| Drilling Co.: | ABC LIOVIN | Easting (NAD83): | 7616510.53 | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Total Depth: | 143.1 ft bgs | Project: | Final GW Remedy Phase 2A |
| Drill Rig Type: | Terra Sonic Truck Mount | Borehole Diameter: | 10-12 inches | Location: | PG&E Topock, Needles California |
| Driller Name: | Eddie Ramos | Depth to First Water: | 80.5 ft bgs | | |
| Drilling Asst: | J. Candelaria / F. Perez | Sampling Method: | 7 inch x 10 ft. Core Barrel | Project Number: | 30126255 |
| Logger: | Grant Willford | Sampling Interval: | Continuous | | |
| Editor: | Sean McGrane | Converted to Well: | ☒ Yes ☐ No | | |

| Depth (ft) | Recovery (ft) | Sieve Sample ID | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Soil Description | Drilling Notes | Drilling Fluid |
|---|---|---|---|---|---|---|---|---|---|
| 121 | 5 | No Sieve Samples Collected | No Groundwater Samples Collected | Competent Bedrock - conglomerate | N/A | | (99.5-143.1 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; hard; massive; some competent rock fragments observed, 1-3 inches in length; difficult to break; some friable rock fragments within the competent rock observed; rock fragments moist to dry; NOTE: Core sample appeared mostly pulverized drilling process. | | |
| 122 | | | | | | | | (122.0 - 127.0') Very rough drilling | (122.0 - 127.0') No drilling fluid used |
| 123 | | | | | | | | | |
| 124 | 5 | | | | | | | | |
| 125 | | | | | | | | | |
| 126 | | | | | | | | | |
| 127 | | | | | | | | (127.0 - 137.0') Normal drilling; rough drilling in discrete intervals. | (127.0 - 137.0') No drilling fluid used |
| 128 | | | | | | | | | |
| 129 | | | | | | | | | |
| 130 | 5 | | | | | | | | |
| 131 | | | | | | | | | |
| 132 | | | | | | | | | |
| 133 | | | | | | | | | |
| 134 | | | | | | | | | |
| 135 | 5 | | | | | | | | |
| 136 | | | | | | | | | |
| 137 | | | | | | | | | |
| 138 | | | | | | | | (137.0 - 143.0') Very rough drilling | (137.0 - 143.0') No drilling fluid used |
| 139 | 6 | | | | | | | | |
| 140 | | | | | | | | | |

Final 10/12/22

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered during drilling and approximate static measured during development, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

TOPOCK SOIL BORING LOG \\ARCADIS365.SHAREPOINT.COM@SSL\DAV\WWROOT\TEAMS\PGETOPOCKCONSTRUCTION\SHARED DOCUMENTS\PHASE II DRILLING\06_FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\39 2022-10-13\GINT PROJECT.GPJ GINT DATA TEMPLATE.GDT 10/13/22

# Boring Log

ARCADIS



**Boring No.: ER-01**

| | | | | | |
|---|---|---|---|---|---|
| Date Started: | 03/31/2022 | Surface Elevation: | 504.57 ft amsl | | |
| Date Completed: | 04/20/2022 | Northing (NAD83): | 2101089.85 | | |
| Drilling Co.: | ABC LIOVIN | Easting (NAD83): | 7616510.53 | Client: | PG&E |
| Drilling Method: | Sonic Drilling | Total Depth: | 143.1 ft bgs | Project: | Final GW Remedy Phase 2A |
| Drill Rig Type: | Terra Sonic Truck Mount | Borehole Diameter: | 10-12 inches | Location: | PG&E Topock, Needles California |
| Driller Name: | Eddie Ramos | Depth to First Water: | 80.5 ft bgs | | |
| Drilling Asst: | J. Candelaria / F. Perez | Sampling Method: | 7 inch x 10 ft. Core Barrel | Project Number: | 30126255 |
| Logger: | Grant Willford | Sampling Interval: | Continuous | | |
| Editor: | Sean McGrane | Converted to Well: | ☒ Yes ☐ No | | |

| Depth (ft) | Recovery (ft) | Sieve Sample ID | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Soil Description | Drilling Notes | Drilling Fluid |
|---|---|---|---|---|---|---|---|---|---|
| 141 | 6 | No Sieve Samples Collected | No Groundwater Samples Collected | Competent Bedrock - conglomerate | N/A | | (99.5-143.1 ft) Sedimentary Rock - Conglomerate; reddish brown (2.5YR 5/4); microcrystalline to coarse grained, angular; hard; massive; some competent rock fragments observed, 1-3 inches in length; difficult to break; some friable rock fragments within the competent rock observed; rock fragments moist to dry; NOTE: Core sample appeared mostly pulverized drilling process. | | |
| 142 | | | | | | | | | |
| 143 | | | | | | | | | |
| | | | | | | | End of Boring at 143.1 ft bgs. | | |
| 144 | | | | | | | | | |
| 145 | | | | | | | | | |
| 146 | | | | | | | | | |
| 147 | | | | | | | | | |
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| 158 | | | | | | | | | |
| 159 | | | | | | | | | |
| 160 | | | | | | | | | |

Final 10/12/22

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered during drilling and approximate static measured during development, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

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