

APPENDIX E

Percentage of In-Control Duplicate Pairs for Field Collocated Samples

Monitoring Program	Media	Analyte	Percent of Pairs within Control Limit ^(a)
Livermore Site and Site 300 Ambient Air	Air Filters	Beryllium	100%
Livermore Site and Site 300 Ambient Air	Air Filters	Uranium-235	100%
Livermore Site and Site 300 Ambient Air	Air Filters	Uranium-235/238	100%
Livermore Site and Site 300 Ambient Air	Air Filters	Uranium-238	100%
Livermore Site and Site 300 Ambient Air	Air Filters	Gross alpha	50%
Livermore Site and Site 300 Ambient Air	Air Filters	Gross beta	69%
Air Tritium	Silica Gel	Tritium	89%
Livermore Site, Livermore Valley, and Site 300 Ambient Radiation	Dosimeters	Radiation dose, average	100%
Livermore Site, Livermore Valley, and Site 300 Ambient Radiation	Dosimeters	Radiation dose, 90-days	100%
Groundwater from Off-site Wells and Springs	Groundwater	Arsenic	79%
Groundwater from Off-site Wells and Springs	Groundwater	Barium	100%
Groundwater from Off-site Wells and Springs	Groundwater	Boron	100%
Groundwater from Off-site Wells and Springs	Groundwater	Bromide	100%
Groundwater from Off-site Wells and Springs	Groundwater	Calcium	100%
Groundwater from Off-site Wells and Springs	Groundwater	Chloride	100%
Groundwater from Off-site Wells and Springs	Groundwater	Chromium	100%
Groundwater from Off-site Wells and Springs	Groundwater	Copper	100%
Groundwater from Off-site Wells and Springs	Groundwater	Fluoride	80%
Groundwater from Off-site Wells and Springs	Groundwater	Gross alpha	33%
Groundwater from Off-site Wells and Springs	Groundwater	Gross beta	50%
Groundwater from Off-site Wells and Springs	Groundwater	Magnesium	100%
Groundwater from Off-site Wells and Springs	Groundwater	Molybdenum	100%
Groundwater from Off-site Wells and Springs	Groundwater	Nickel	100%
Groundwater from Off-site Wells and Springs	Groundwater	Nitrate (as NO ₃)	100%
Groundwater from Off-site Wells and Springs	Groundwater	Ortho-Phosphate	100%
Groundwater from Off-site Wells and Springs	Groundwater	Perchlorate	75%
Groundwater from Off-site Wells and Springs	Groundwater	pH	100%
Groundwater from Off-site Wells and Springs	Groundwater	Potassium	100%
Groundwater from Off-site Wells and Springs	Groundwater	Selenium	100%
Groundwater from Off-site Wells and Springs	Groundwater	Sodium	100%
Groundwater from Off-site Wells and Springs	Groundwater	Specific Conductance	100%
Groundwater from Off-site Wells and Springs	Groundwater	Sulfate	100%

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Groundwater from Off-site Wells and Springs	Groundwater	Total Alkalinity (as CaCO ₃)	100%
Groundwater from Off-site Wells and Springs	Groundwater	Total coliform	0%
Groundwater from Off-site Wells and Springs	Groundwater	Total Hardness (as CaCO ₃)	100%
Groundwater from Off-site Wells and Springs	Groundwater	Total dissolved solids (TDS)	100%
Groundwater from Off-site Wells and Springs	Groundwater	Turbidity	0%
Groundwater from Off-site Wells and Springs	Groundwater	Uranium-233/234	75%
Groundwater from Off-site Wells and Springs	Groundwater	Uranium 235 and 236	100%
Groundwater from Off-site Wells and Springs	Groundwater	Uranium-238	100%
Groundwater from Off-site Wells and Springs	Groundwater	Zinc	33%
Pre-construction Soil	Soil	Arsenic	100%
Pre-construction Soil	Soil	Barium	86%
Pre-construction Soil	Soil	Beryllium	100%
Pre-construction Soil	Soil	Chromium	100%
Pre-construction Soil	Soil	Cobalt	86%
Pre-construction Soil	Soil	Copper	100%
Pre-construction Soil	Soil	Diesel Fuel	100%
Pre-construction Soil	Soil	Fluoride	0%
Pre-construction Soil	Soil	Gross alpha	100
Pre-construction Soil	Soil	Gross beta	0%
Pre-construction Soil	Soil	Hexavalent chromium	0%
Pre-construction Soil	Soil	Lead	100%
Pre-construction Soil	Soil	Mercury	33%
Pre-construction Soil	Soil	Molybdenum	100%
Pre-construction Soil	Soil	Nickel	86%
Pre-construction Soil	Soil	Nitrate (as N)	100%
Pre-construction Soil	Soil	Oil	100%
Pre-construction Soil	Soil	Silver	100%
Pre-construction Soil	Soil	Solids, percent	100%
Pre-construction Soil	Soil	Tetrachloroethene	0%
Pre-construction Soil	Soil	Trichloroethene	0%
Pre-construction Soil	Soil	Vanadium	100%
Pre-construction Soil	Soil	Zinc	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Acetone	60%

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Monitoring Program	Media	Analyte	Percent of Pairs within Control Limit ^(a)
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Actinium-228	70%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Arsenic	78%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Barium	67%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Beryllium	62%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Bismuth-212	52%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Bismuth-214	77%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Cadmium	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Cesium-137	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Chromium	83%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Cobalt	76%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Copper	76%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Gross alpha	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Gross beta	67%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Hexavalent Chromium	67%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Lead	72%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Lead-212	80%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Lead-214	86%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Mercury	46%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Moisture by weight	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Molybdenum	57%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Nickel	76%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Nitrate (as N)	50%

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Monitoring Program	Media	Analyte	Percent of Pairs within Control Limit ^(a)
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Oil	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Plutonium-239/240	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Potassium-40	97%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Radium-224	0%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Radium-226	80%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Radium-228	70%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Selenium	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Silver	79%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Solids, Percent	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Tetrachloroethene	33%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Thallium 208	69%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Thorium-228	71%
Livermore Site, Livermore Valley and Site 300 Soil	Soil	Thorium 230	67%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Thorium 232	62%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Thorium 234	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Trichloroethene	29%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Tritium	0%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Uranium 234 and 233 (in activity)	68%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Uranium-235 (in activity)	100%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Uranium-238 (in activity)	76%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Vanadium	78%
Livermore Site, Livermore Valley, and Site 300 Soil	Soil	Zinc	83%

E. Percentage of In-Control Duplicate Pairs for Field Collected Samples

Monitoring Program	Media	Analyte	Percent of Pairs within Control Limit ^(a)
Livermore Site, Livermore Valley, and Site 300 Vegetation	Vegetation	Moisture by weight	100%
Livermore Site, Livermore Valley, and Site 300 Vegetation	Vegetation	Tritium	80%
Livermore Site Storm Water Runoff	Storm Water	Ammonia nitrogen (as N)	100%
Livermore Site Storm Water Runoff	Storm Water	Arsenic	100%
Livermore Site Storm Water Runoff	Storm Water	Gross alpha	100%
Livermore Site Storm Water Runoff	Storm Water	Gross beta	50%
Livermore Site Storm Water Runoff	Storm Water	Lead	100%
Livermore Site Storm Water Runoff	Storm Water	Magnesium	100%
Livermore Site Storm Water Runoff	Storm Water	Nitrate plus Nitrite (as N)	50%
Livermore Site Storm Water Runoff	Storm Water	Total suspended solids	100%
Livermore Site Storm Water Runoff	Storm Water	Chemical oxygen demand	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Aluminum	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Arsenic	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Barium	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Gross alpha	50%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Gross beta	83%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Boron	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Bromodichloromet hane	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Bromoform	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Calcium	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Chloroform	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Copper	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Dibromochloromet hane	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Fecal coliform	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Iron	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Magnesium	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Potassium	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Sodium	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Total coliform	0%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Total dissolved solids (TDS)	0%

E. Percentage of In-Control Duplicate Pairs for Field Collected Samples

Monitoring Program	Media	Analyte	Percent of Pairs within Control Limit^(a)
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Total suspended solids	0%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Volatile solids	100%
Sanitary Sewer Discharge to Livermore WRD	Sewer Effluent	Zinc	100%

(a) Control limit is set at 30%. An RPD (relative percent difference) > 30% is out of control.
See Chapter 8, Section 8.2.3 for more information about RPDs. Data date: June 16, 2023