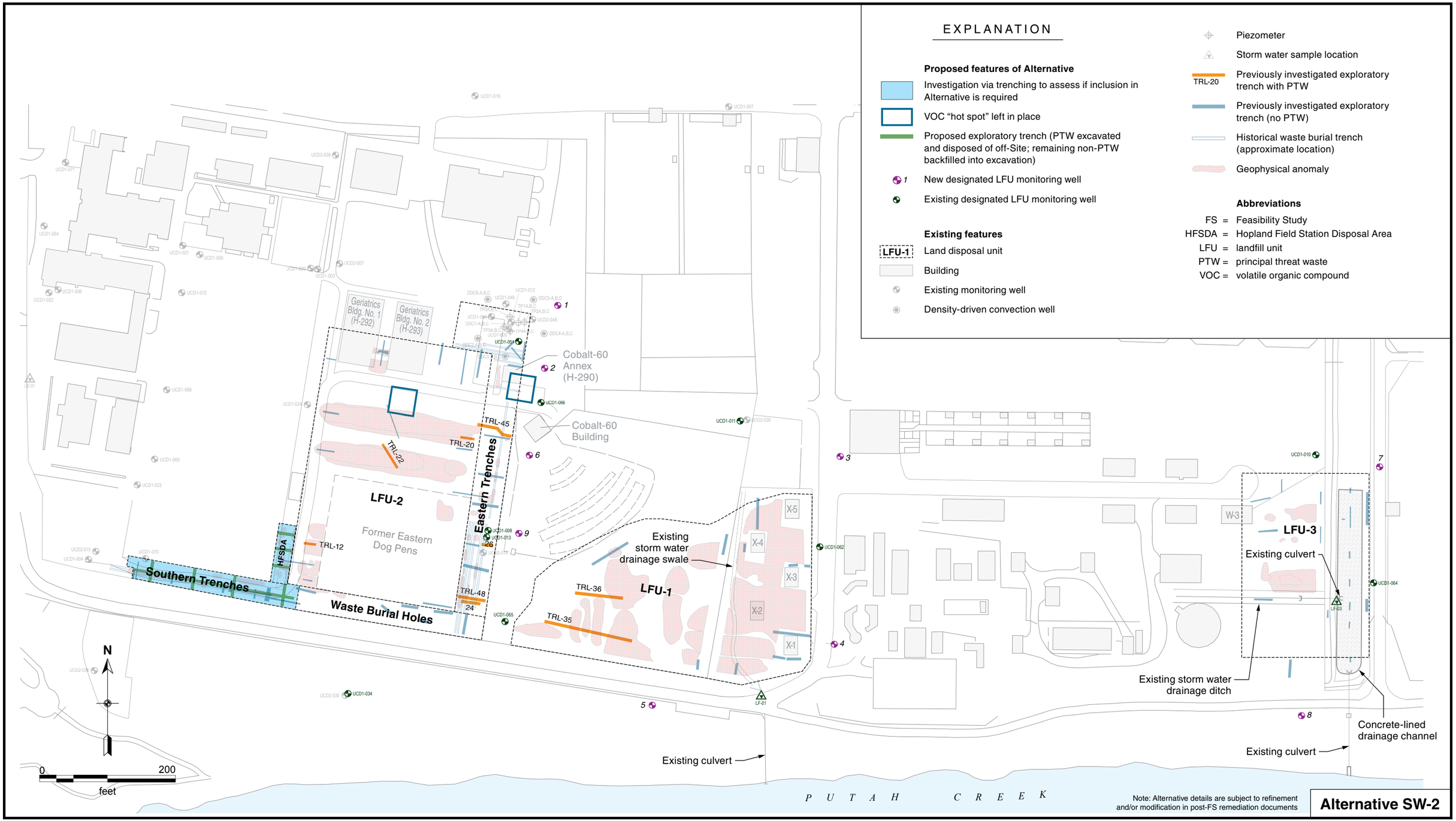


Figure 5-1. Alternative SW-2: Institutional Controls and Groundwater Monitoring - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

EXPLANATION

Proposed features of Alternative

- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; confirmation soil samples collected; remaining soil/solid waste moved to an on-Site capped area; excavated area backfilled with clean fill
- Investigation via trenching to assess if inclusion in Alternative is required
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; remaining material backfilled within graded & covered unit
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; area backfilled with clean fill
- H-290 — Building to be demolished and debris recycled or disposed of off-Site
- Fill and establish proper grades with low-permeability fill covering CAMU; plant vegetative cover
- Fill and establish proper grades with low-permeability fill; extension contingent upon results of sampling
- TRL-20 — Previously investigated exploratory trench with PTW (excavated and PTW disposed of off-Site; remaining non-PTW backfilled into excavation)
- Proposed exploratory trench (PTW excavated and disposed of off-Site; remaining non-PTW backfilled into excavation)
- Soil/solid waste moved to CAMU
- Clean material used as backfill
- Underground drainage collection pipe
- Underground discharge pipe
- Storm water lift station
- 1 — New designated LFU monitoring well
- Storm water sample location designated for monitoring
- Existing designated LFU monitoring well

Existing features

- LFU-1 — Land disposal unit
- Building
- Existing monitoring well
- Density-driven convection well
- Piezometer
- Storm water sample location
- Previously investigated exploratory trench (no PTW)
- Historical waste burial trench (approximate location)
- Geophysical anomaly

Abbreviations

CAMU = corrective action management unit
FS = Feasibility Study
HFSDA = Hopland Field Station Disposal Area
LFU = landfill unit
PTW = principal threat waste
VOC = volatile organic compound

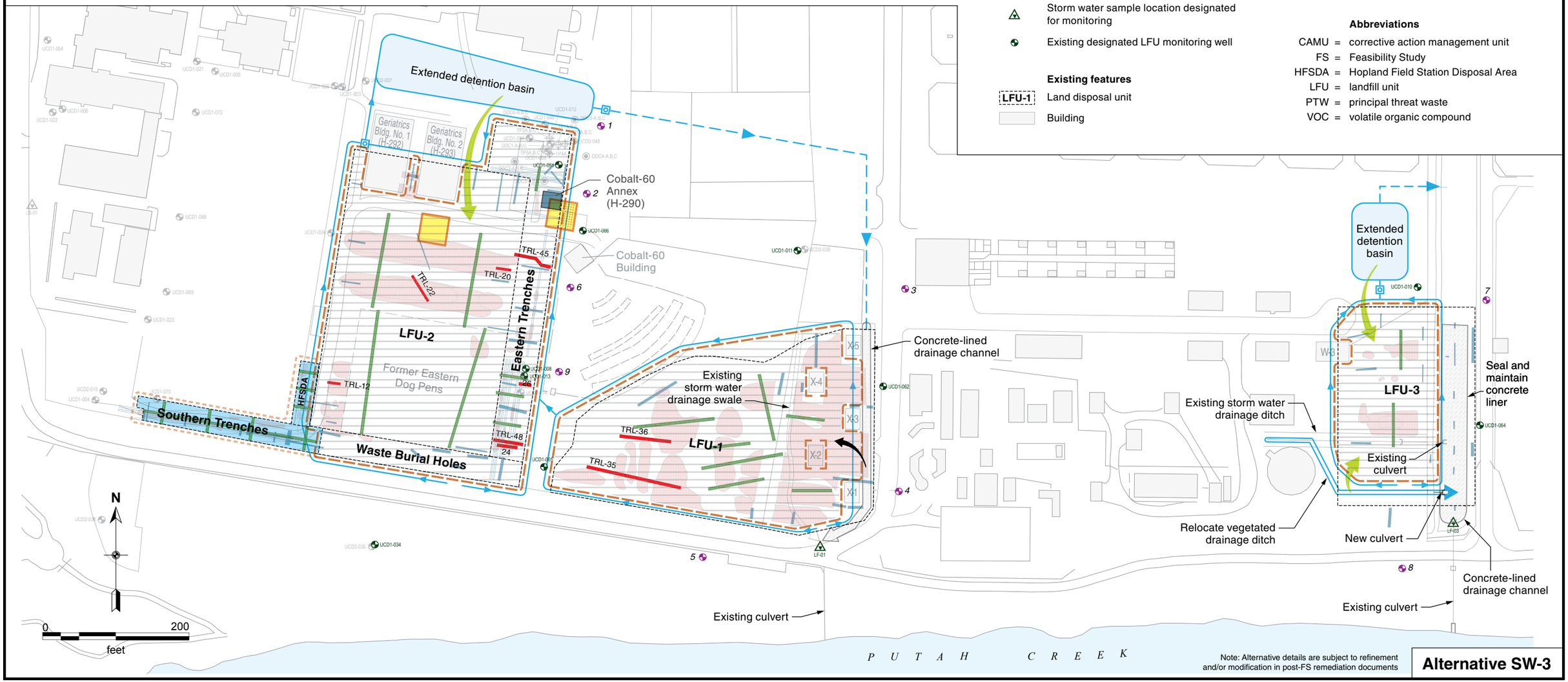


Figure 5-2. Alternative SW-3: VOC "Hot Spot" Removal, Three On-Site Corrective Action Management Units with Graded Covers, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

EXPLANATION

Proposed features of Alternative

- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; confirmation soil samples collected; remaining soil/solid waste moved to an on-Site capped area; excavated area backfilled with clean fill
- Investigation via trenching to assess if inclusion in Alternative is required
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; remaining material backfilled within capped unit
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; area backfilled with clean fill
- H-292 Building to be demolished and non-hazardous debris recycled or disposed of in on-Site CAMU
- Evapotranspiration cap covering CAMU
- Evapotranspiration cap extension contingent upon results of sampling
- TRL-20 Previously investigated exploratory trench with PTW (excavated and PTW disposed of off-Site; remaining non-PTW backfilled into excavation)
- Proposed exploratory trench (PTW excavated and disposed of off-Site; remaining non-PTW backfilled into excavation)
- Soil/solid waste moved to CAMU
- Clean material used as backfill
- Underground drainage collection pipe
- Underground discharge pipe
- Storm water lift station
- 1 New designated LFU monitoring well
- Storm water sample location designated for monitoring
- Existing designated LFU monitoring well
- Monitoring well assumed to be decommissioned
- Monitoring well assumed to be decommissioned and relocated
- Density-driven convection well assumed to be decommissioned and relocated
- Piezometer assumed to be decommissioned
- Piezometer assumed to be decommissioned and relocated

Existing features

- LFU-1 Land disposal unit
- Building
- Existing monitoring well
- Density-driven convection well
- Storm water sample location
- Previously investigated exploratory trench (no PTW)
- Historical waste burial trench (approximate location)
- Geophysical anomaly

Abbreviations

CAMU = corrective action management unit
FS = Feasibility Study
HFSDA = Hopland Field Station Disposal Area
LFU = landfill unit
PTW = principal threat waste
VOC = volatile organic compound

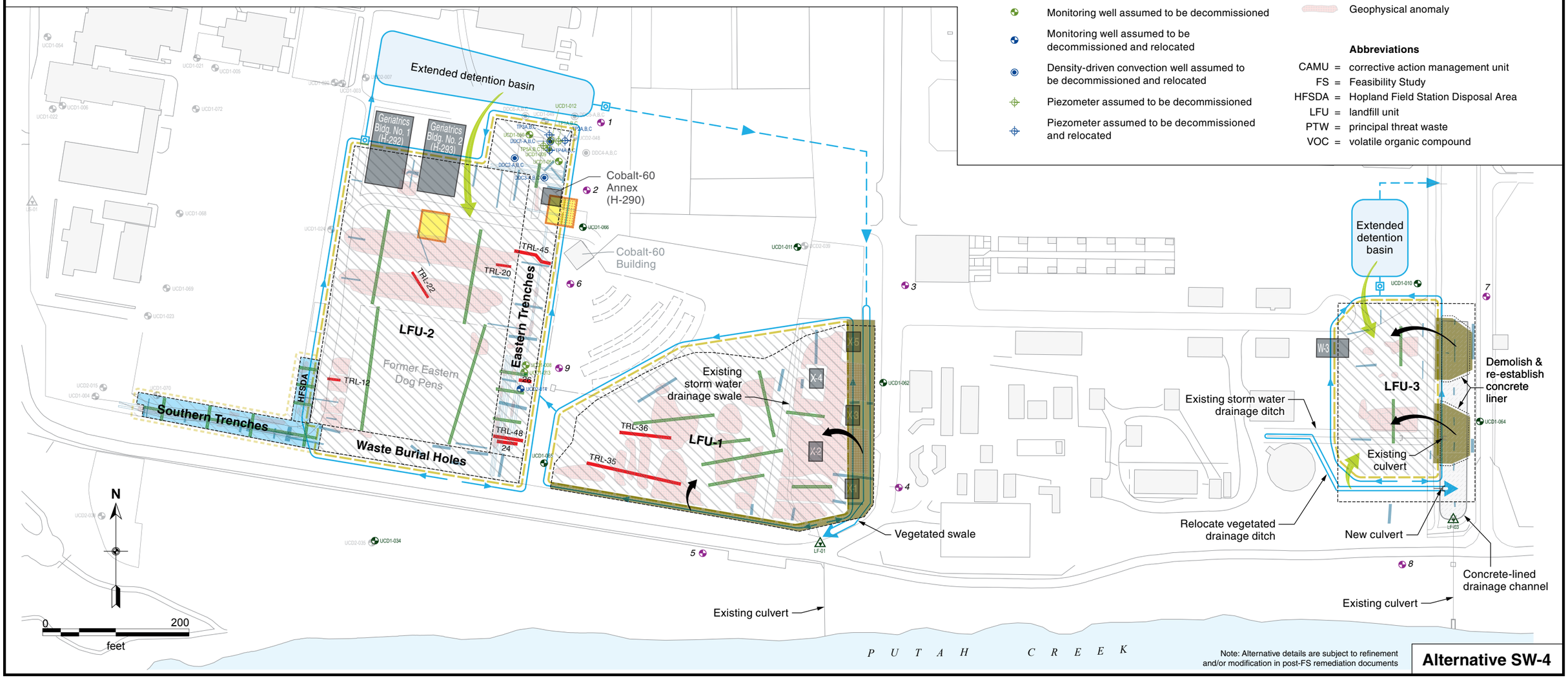


Figure 5-3. Alternative SW-4: VOC "Hot Spot" Removal, Three On-Site Corrective Action Management Units with Evapotranspiration Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

EXPLANATION

Proposed features of Alternative

- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; confirmation soil samples collected; remaining soil/solid waste moved to an on-Site capped area; excavated area backfilled with clean fill
- Investigation via trenching to assess if inclusion in Alternative is required
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; remaining material backfilled within capped unit
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; area backfilled with clean fill
- H-292 — Building to be demolished and non-hazardous debris recycled or disposed of in on-Site CAMU
- Asphalt cap covering CAMU
- Asphalt cap extension contingent upon results of sampling
- TRL-20 — Previously investigated exploratory trench with PTW (excavated and PTW disposed of off-Site; remaining non-PTW backfilled into excavation)
- Proposed exploratory trench (PTW excavated and disposed of off-Site; remaining non-PTW backfilled into excavation)
- Soil/solid waste moved to CAMU
- Clean material used as backfill
- Underground drainage collection pipe
- Underground discharge pipe
- Storm water lift station
- 1 — New designated LFU monitoring well
- Storm water sample location designated for monitoring
- Existing designated LFU monitoring well
- Monitoring well assumed to be decommissioned
- Monitoring well assumed to be decommissioned and relocated
- Density-driven convection well assumed to be decommissioned and relocated
- Piezometer assumed to be decommissioned
- Piezometer assumed to be decommissioned and relocated

Existing features

- LFU-1 — Land disposal unit
- Building
- Existing monitoring well
- Density-driven convection well
- Storm water sample location
- Previously investigated exploratory trench (no PTW)
- Historical waste burial trench (approximate location)
- Geophysical anomaly

Abbreviations

CAMU = corrective action management unit
FS = Feasibility Study
HFSDA = Hopland Field Station Disposal Area
LFU = landfill unit
PTW = principal threat waste
VOC = volatile organic compound

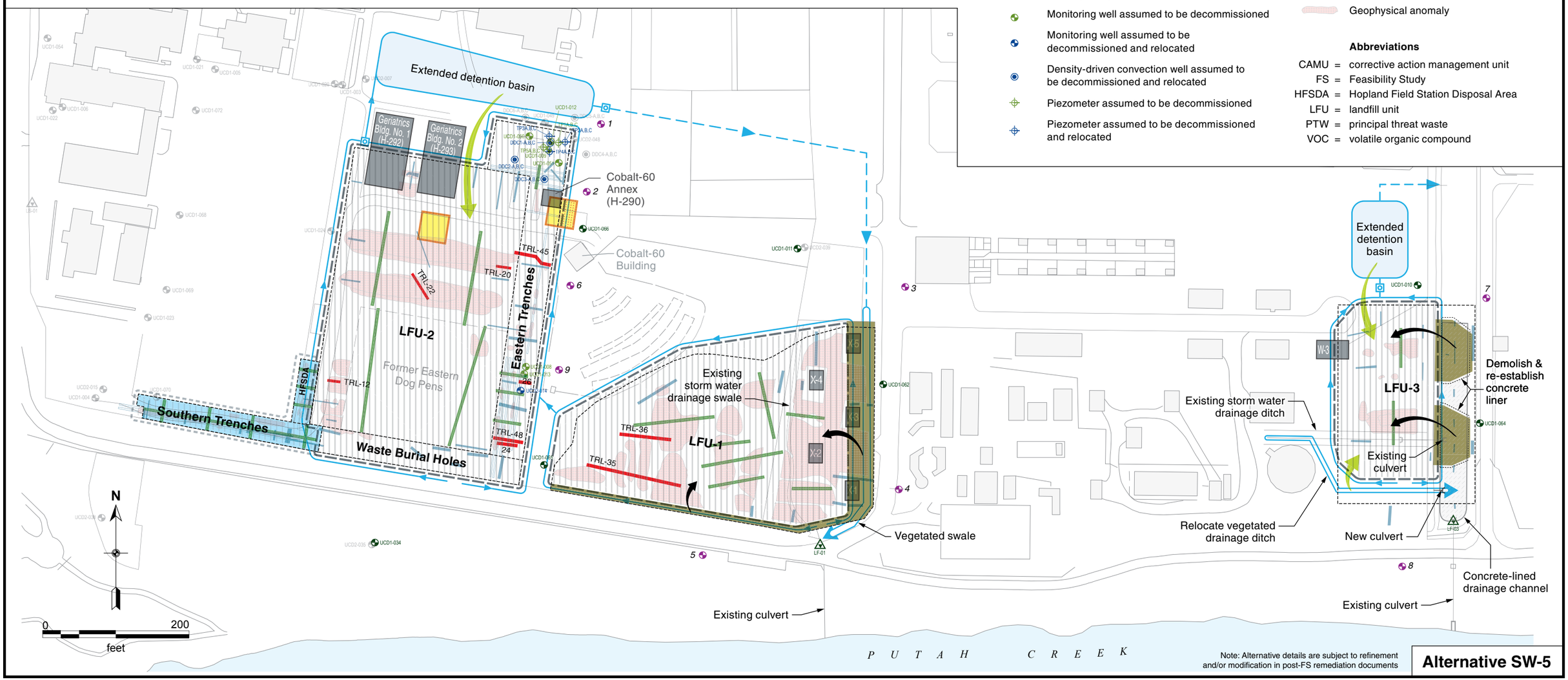


Figure 5-4. Alternative SW-5: VOC "Hot Spot" Removal, Three On-Site Corrective Action Management Units with Asphalt Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

EXPLANATION

Proposed features of Alternative

- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; confirmation soil samples collected; remaining soil/solid waste moved to an on-Site capped area; excavated area backfilled with clean fill
- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; remaining soil/solid waste placed back into excavation area within capped unit
- Investigation via trenching to assess if inclusion in Alternative is required
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; remaining material backfilled within capped unit
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; area backfilled with clean fill
- H-292 — Building to be demolished and non-hazardous debris recycled or disposed of in on-Site CAMU
- Multiple-layer cap covering CAMU, unlined
- Multiple-layer cap extension contingent upon results of sampling
- TRL-20 — Previously investigated exploratory trench with PTW (excavated and PTW disposed of off-Site; remaining non-PTW backfilled into excavation)
- Proposed exploratory trench (PTW excavated and disposed of off-Site; remaining non-PTW backfilled into excavation)
- Soil/solid waste moved to CAMU
- Clean material used as backfill
- Underground drainage collection pipe
- Underground discharge pipe
- Storm water lift station
- 1 — New designated LFU monitoring well
- Storm water sample location designated for monitoring
- Existing designated LFU monitoring well
- Monitoring well assumed to be decommissioned
- Monitoring well assumed to be decommissioned and relocated
- Density-driven convection well assumed to be decommissioned and relocated
- Piezometer assumed to be decommissioned
- Piezometer assumed to be decommissioned and relocated

Existing features

- LFU-1 — Land disposal unit
- Building
- Existing monitoring well
- Density-driven convection well
- Storm water sample location
- Previously investigated exploratory trench (no PTW)
- Historical waste burial trench (approximate location)
- Geophysical anomaly

Abbreviations

CAMU = corrective action management unit
FS = Feasibility Study
HFSDA = Hopland Field Station Disposal Area
LFU = landfill unit
PTW = principal threat waste
VOC = volatile organic compound

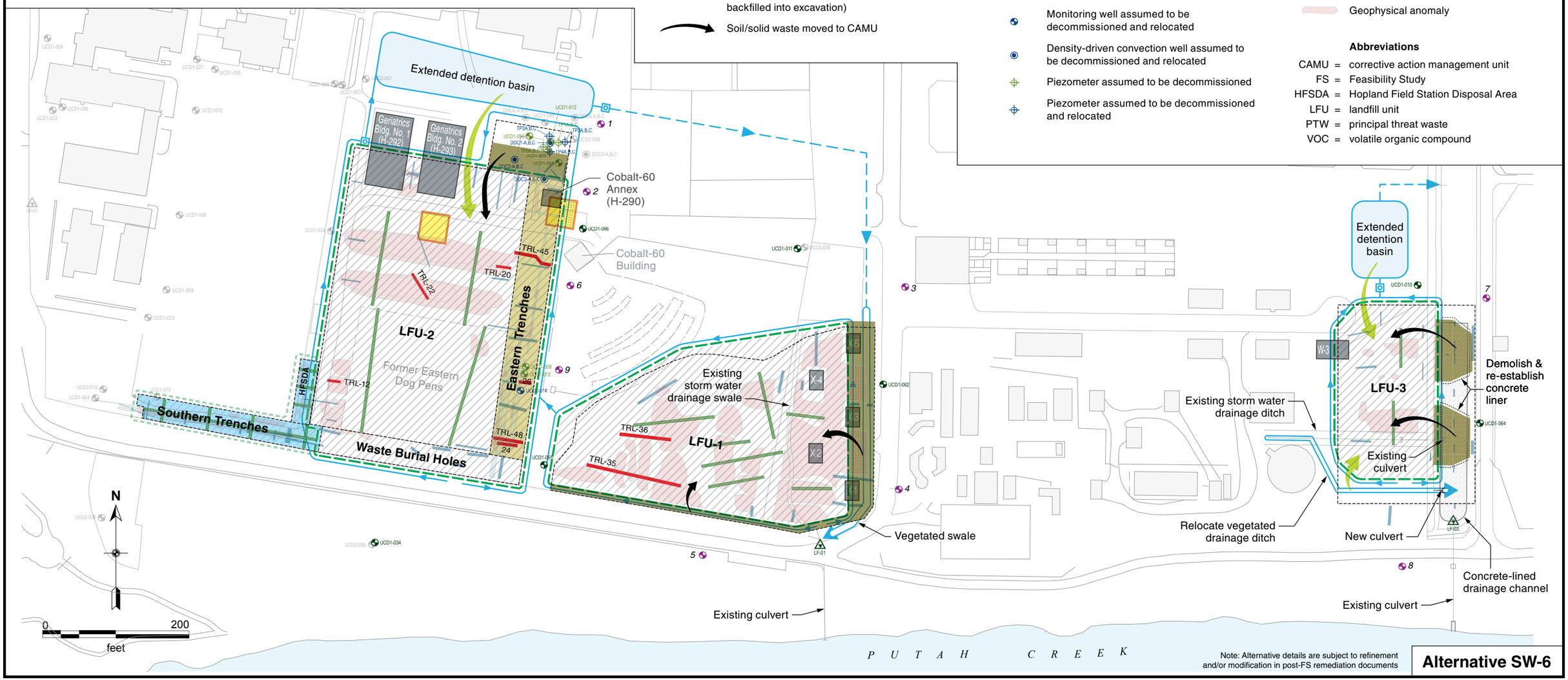


Figure 5-5. Alternative SW-6: VOC "Hot Spot" Removal, Three On-Site Corrective Action Management Units with Multiple-Layer Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

EXPLANATION

Proposed features of Alternative

- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; confirmation soil samples collected; remaining soil/solid waste moved to an on-Site capped area; excavated area backfilled with clean fill
- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; remaining soil/solid waste placed back into excavation area within capped unit
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; remaining material backfilled within capped unit
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; area backfilled with clean fill
- H-292 — Building to be demolished and non-hazardous debris recycled or disposed of in on-Site CAMU
- Multiple-layer cap covering CAMU, unlined
- TRL-20 — Previously investigated exploratory trench with PTW (excavated and PTW disposed of off-Site; remaining non-PTW backfilled into excavation)
- Proposed exploratory trench (PTW excavated and disposed of off-Site; remaining non-PTW backfilled into excavation)
- Soil/solid waste moved to CAMU
- Clean material used as backfill
- Underground drainage collection pipe
- Underground discharge pipe
- Storm water lift station
- 1 — New designated LFU monitoring well
- Storm water sample location designated for monitoring
- Existing designated LFU monitoring well
- Monitoring well assumed to be decommissioned
- Monitoring well assumed to be decommissioned and relocated
- Density-driven convection well assumed to be decommissioned and relocated
- Piezometer assumed to be decommissioned
- Piezometer assumed to be decommissioned and relocated

Existing features

- LFU-1 — Land disposal unit
- Building
- Existing monitoring well
- Density-driven convection well
- Storm water sample location
- Previously investigated exploratory trench (no PTW)
- Historical waste burial trench (approximate location)
- Geophysical anomaly

Abbreviations

CAMU = corrective action management unit
FS = Feasibility Study
HFSDA = Hopland Field Station Disposal Area
LFU = landfill unit
PTW = principal threat waste
VOC = volatile organic compound

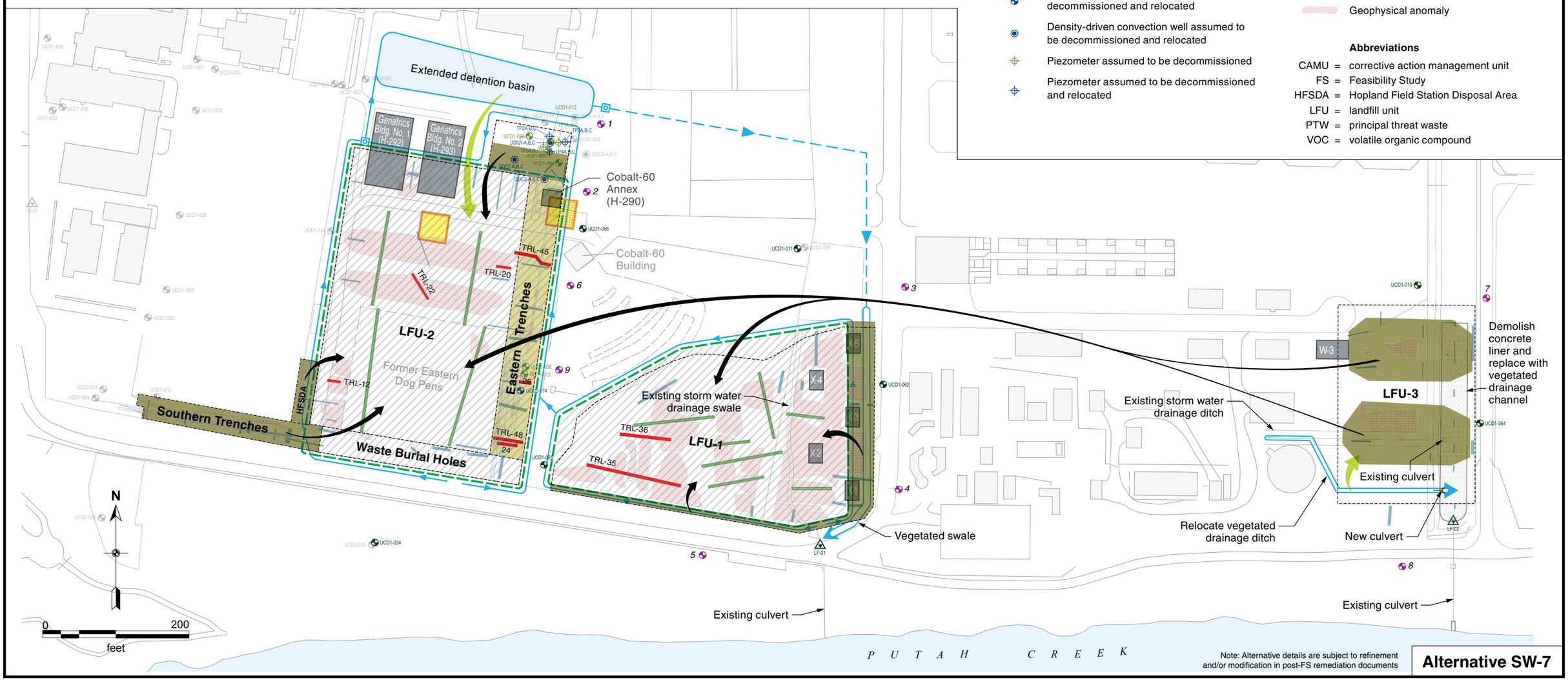


Figure 5-6. Alternative SW-7: VOC "Hot Spot" Removal, Two On-Site Corrective Action Management Units with Multiple-Layer Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

EXPLANATION

Proposed features of Alternative

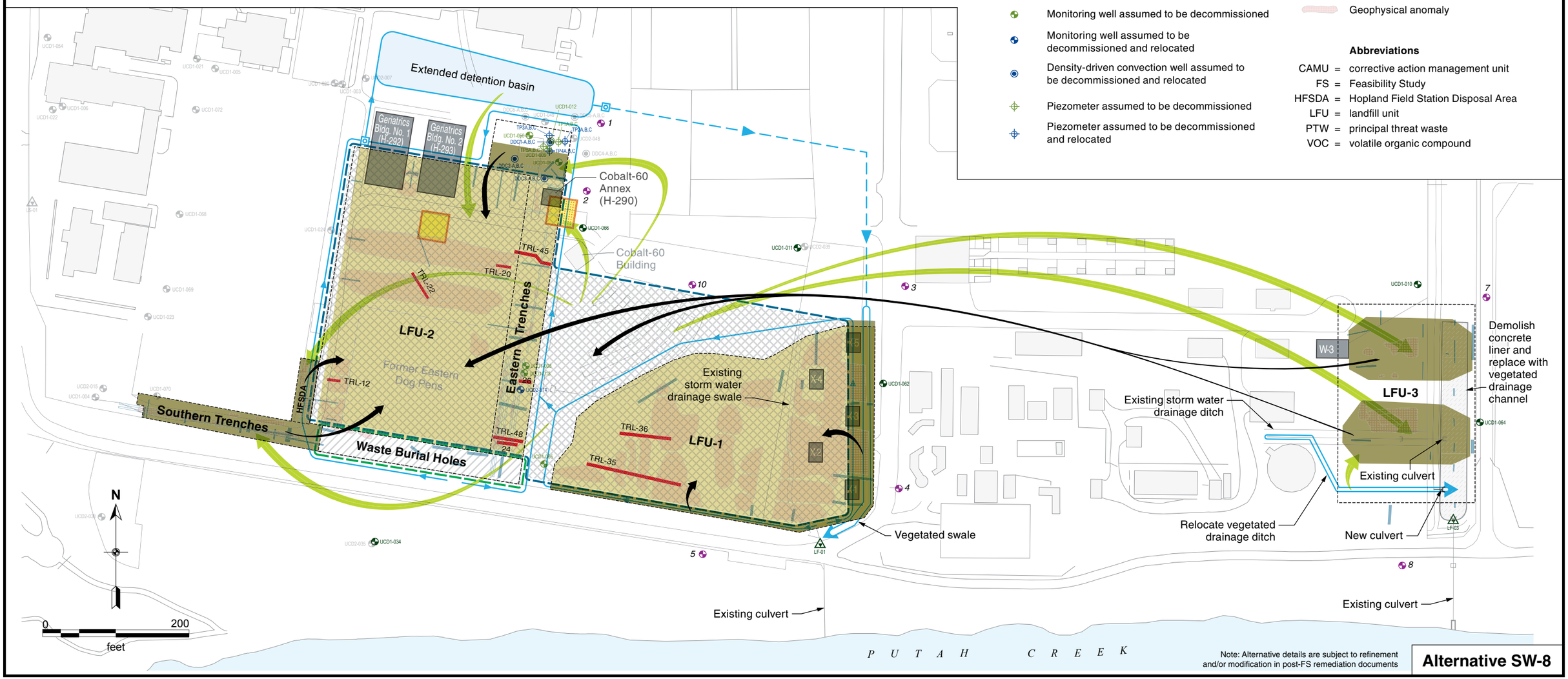
- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; confirmation soil samples collected; remaining soil/solid waste moved to an on-Site capped area; excavated area backfilled with clean fill
- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; remaining soil/solid waste placed back into excavation area within capped unit
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; remaining material backfilled within capped unit
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; area backfilled with clean fill
- H-292 — Building to be demolished and non-hazardous debris recycled or disposed of in on-Site CAMU
- Multiple-layer cap covering CAMU, with liner, leachate control and recovery system
- Multiple-layer cap covering CAMU, unlined
- TRL-20 — Previously investigated exploratory trench with PTW (excavated and PTW disposed of off-Site; remaining non-PTW backfilled into excavation)
- Soil/solid waste moved to CAMU
- Clean material used as backfill
- Underground drainage collection pipe
- Underground discharge pipe
- Storm water lift station
- 1 — New designated LFU monitoring well
- Storm water sample location designated for monitoring
- Existing designated LFU monitoring well
- Monitoring well assumed to be decommissioned
- Monitoring well assumed to be decommissioned and relocated
- Density-driven convection well assumed to be decommissioned and relocated
- Piezometer assumed to be decommissioned
- Piezometer assumed to be decommissioned and relocated

Existing features

- LFU-1 — Land disposal unit
- Building
- Existing monitoring well
- Density-driven convection well
- Storm water sample location
- Previously investigated exploratory trench (no PTW)
- Historical waste burial trench (approximate location)
- Geophysical anomaly

Abbreviations

CAMU = corrective action management unit
FS = Feasibility Study
HFSDA = Hopland Field Station Disposal Area
LFU = landfill unit
PTW = principal threat waste
VOC = volatile organic compound



Note: Alternative details are subject to refinement and/or modification in post-FS remediation documents

Alternative SW-8

Figure 5-7. Alternative SW-8: VOC "Hot Spot" Removal, One On-Site Lined Corrective Action Management Unit with Multiple-Layer Cap, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

EXPLANATION

Proposed features of Alternative

- Soil/solid waste excavation area; PTW segregated and disposed of off-Site; confirmation soil samples collected; remaining soil/solid waste moved to an on-Site capped area; excavated area backfilled with clean fill
- Soil/solid waste excavation, segregation; characterization and off-Site disposal; backfilled with clean fill
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; area backfilled with clean fill
- H-292 — Building to be demolished and debris recycled or disposed of off-Site
- Multiple-layer cap covering CAMU, unlined
- TRL-20 — Previously investigated exploratory trench with PTW (excavated and material disposed of off-Site)
- Soil/solid waste moved to CAMU
- Clean material used as backfill
- 1 — New designated LFU monitoring well
- Storm water sample location designated for monitoring
- Existing designated LFU monitoring well
- Monitoring well assumed to be decommissioned
- Monitoring well assumed to be decommissioned and relocated
- Density-driven convection well assumed to be decommissioned and relocated
- Piezometer assumed to be decommissioned
- Piezometer assumed to be decommissioned and relocated

Existing features

- LFU-1 — Land disposal unit
- Building
- Existing monitoring well
- Density-driven convection well
- Storm water sample location
- Previously investigated exploratory trench (no PTW)
- Historical waste burial trench (approximate location)
- Geophysical anomaly

Abbreviations

CAMU = corrective action management unit
FS = Feasibility Study
HFSDA = Hopland Field Station Disposal Area
LFU = landfill unit
PTW = principal threat waste
VOC = volatile organic compound

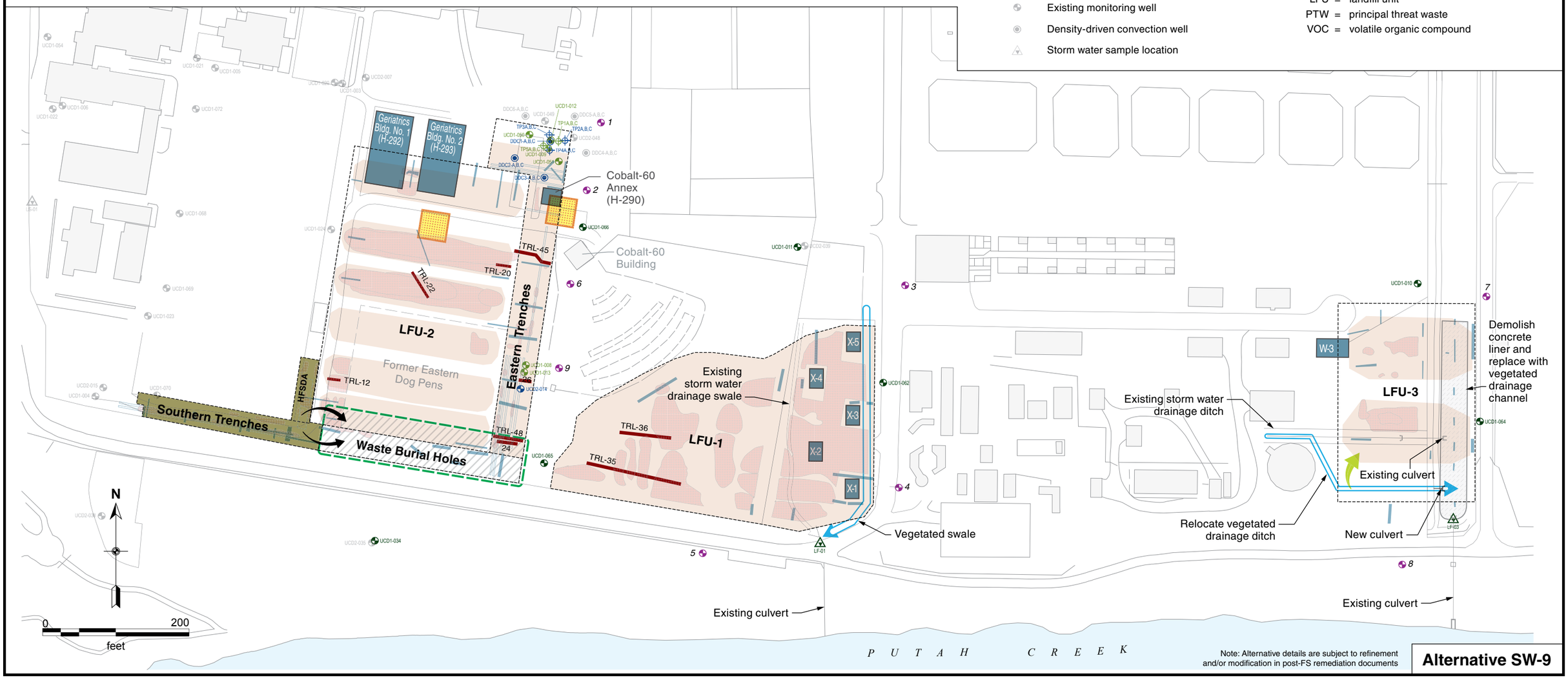


Figure 5-8. Alternative SW-9: Excavate and Dispose of Waste Off-Site, Waste Burial Holes Corrective Action Management Unit with Multiple-Layer Cap, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

EXPLANATION

Proposed features of Alternative

- Soil/solid waste excavation, segregation; characterization and off-Site disposal; backfilled with clean fill
- VOC "hot spot" excavation and removal of soil to 20 feet below ground surface; hazardous material disposed of off-Site; area backfilled with clean fill
- H-292 — Building to be demolished and debris recycled or disposed of off-Site
- TRL-20 — Previously investigated exploratory trench with PTW (excavated and material disposed of off-Site)
- Clean material used as backfill
- 1 — New designated LFU monitoring well
- Storm water sample location designated for monitoring
- Existing designated LFU monitoring well
- Monitoring well assumed to be decommissioned
- Monitoring well assumed to be decommissioned and relocated
- Density-driven convection well assumed to be decommissioned and relocated
- Piezometer assumed to be decommissioned
- Piezometer assumed to be decommissioned and relocated

Existing features

- LFU-1 — Land disposal unit
- Building
- Existing monitoring well
- Density-driven convection well
- Storm water sample location
- Previously investigated exploratory trench (no PTW)
- Historical waste burial trench (approximate location)
- Geophysical anomaly

Abbreviations

FS = Feasibility Study
HFSDA = Hopland Field Station Disposal Area
LFU = landfill unit
PTW = principal threat waste
VOC = volatile organic compound

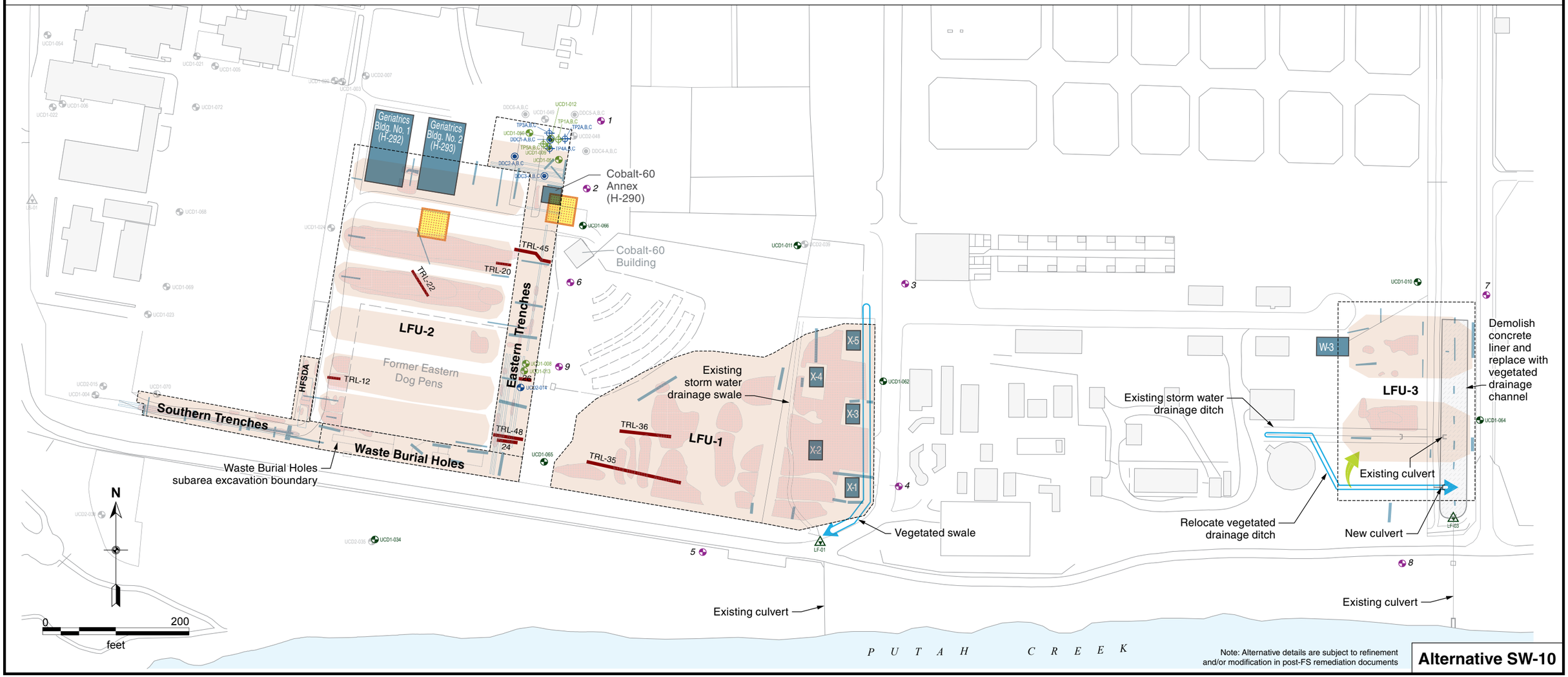


Figure 5-9. Alternative SW-10: Excavate and Dispose of Waste Off-Site, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

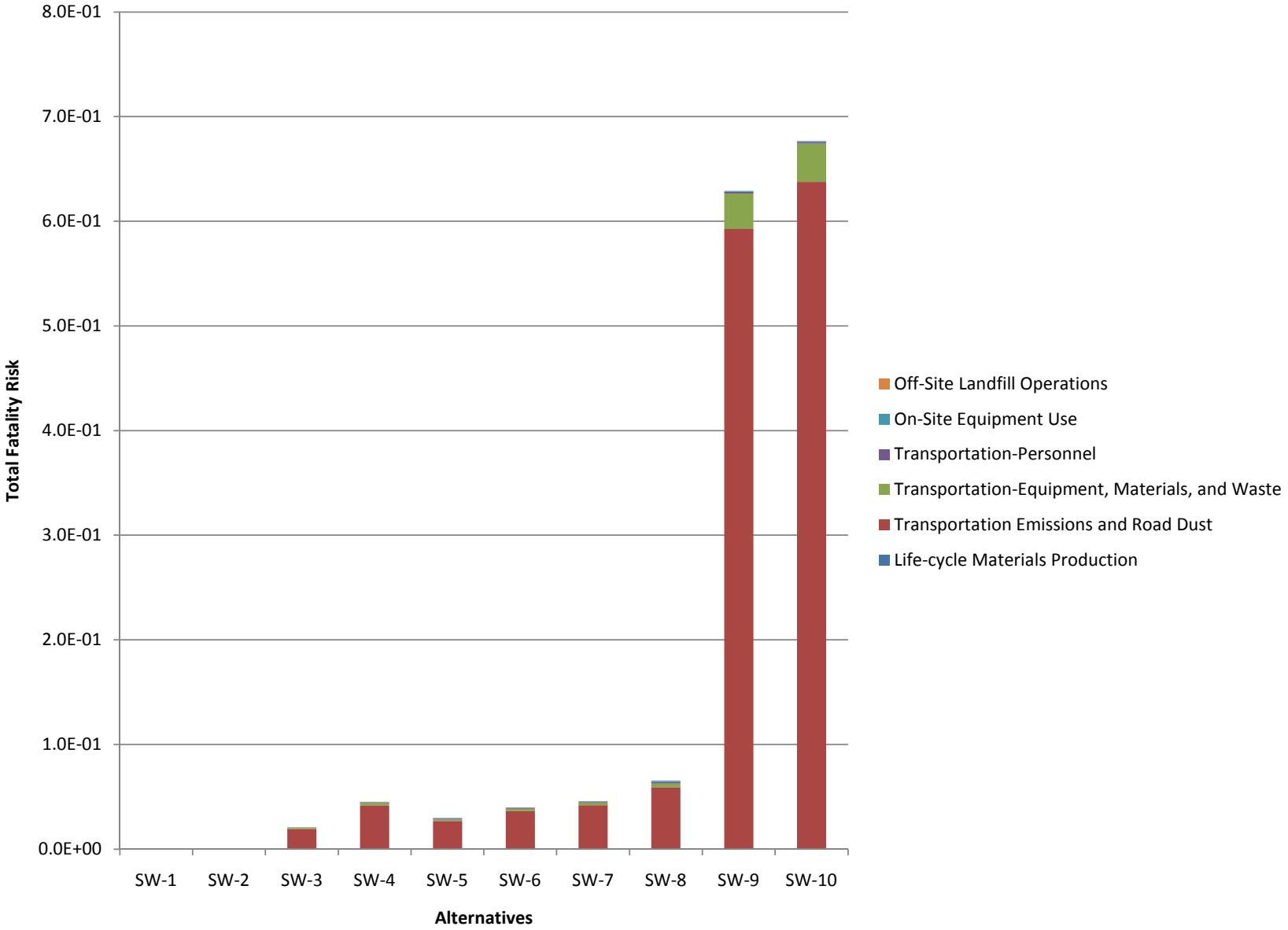


Figure 7-1. Total Fatality Risk Estimates by Alternative - Laboratory for Energy-related Health Research, University of California, Davis

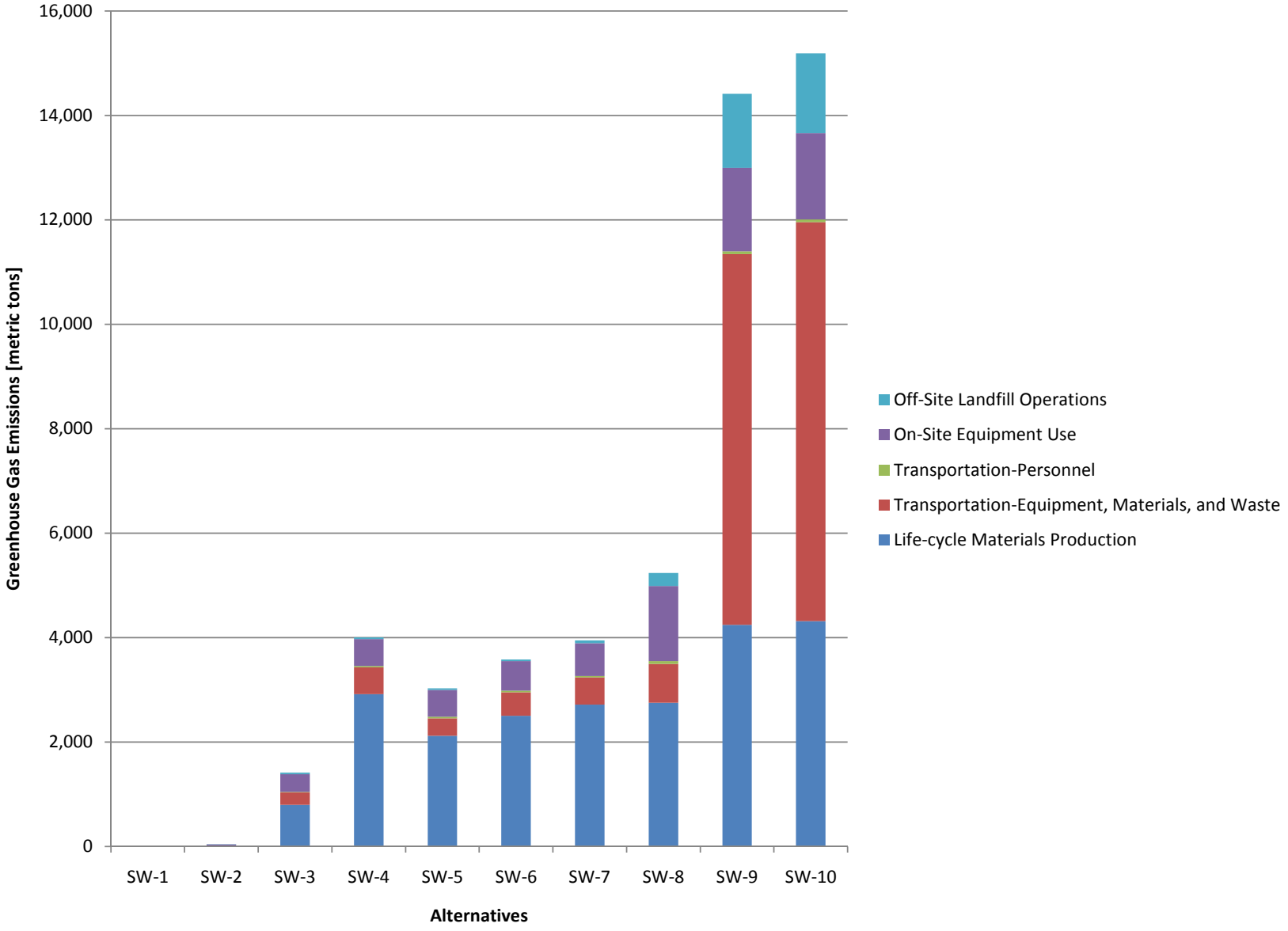


Figure 7-2. Greenhouse Gas Emissions Estimates by Alternative - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

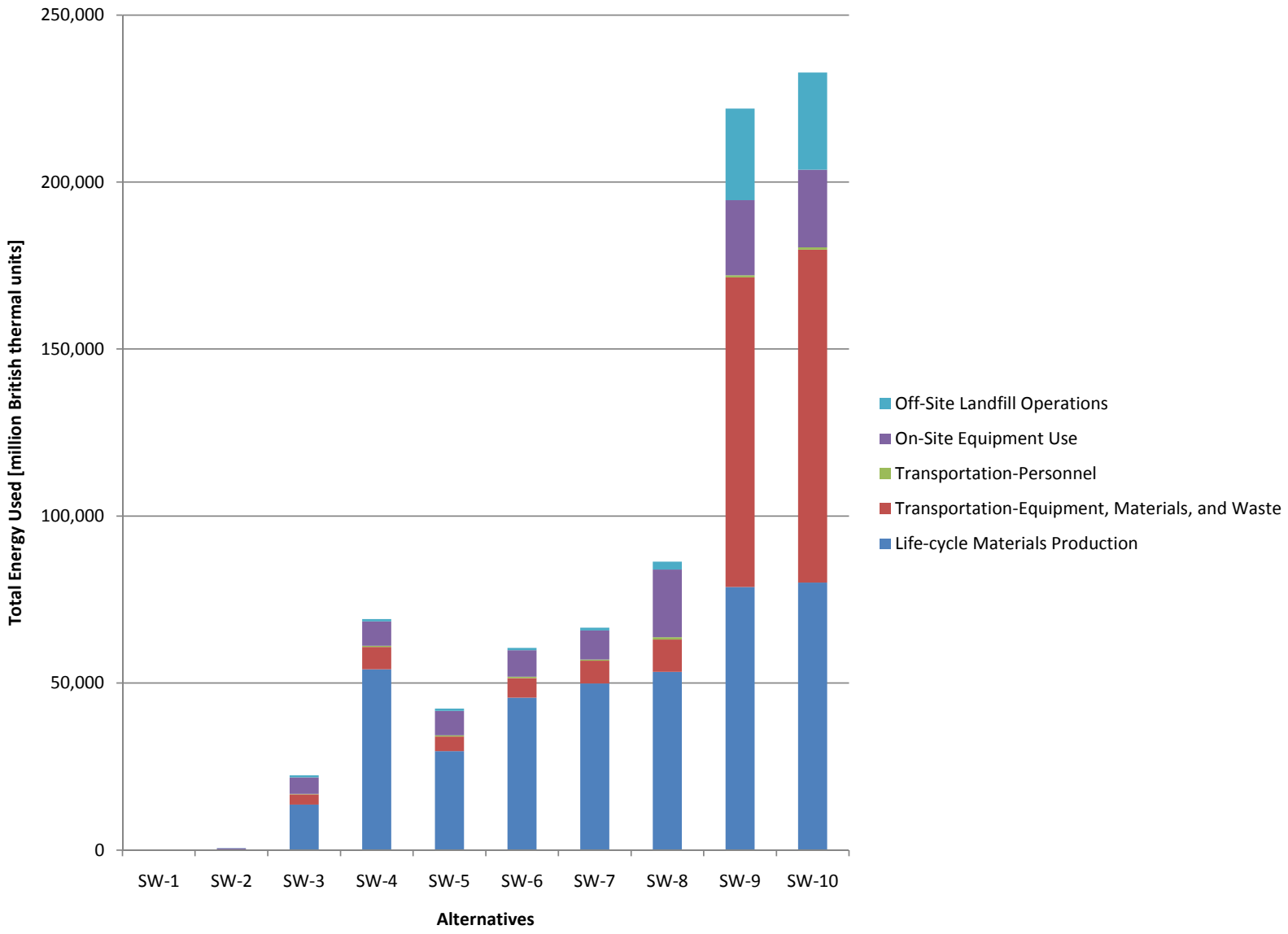


Figure 7-3. Total Energy Use Estimates by Alternative - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

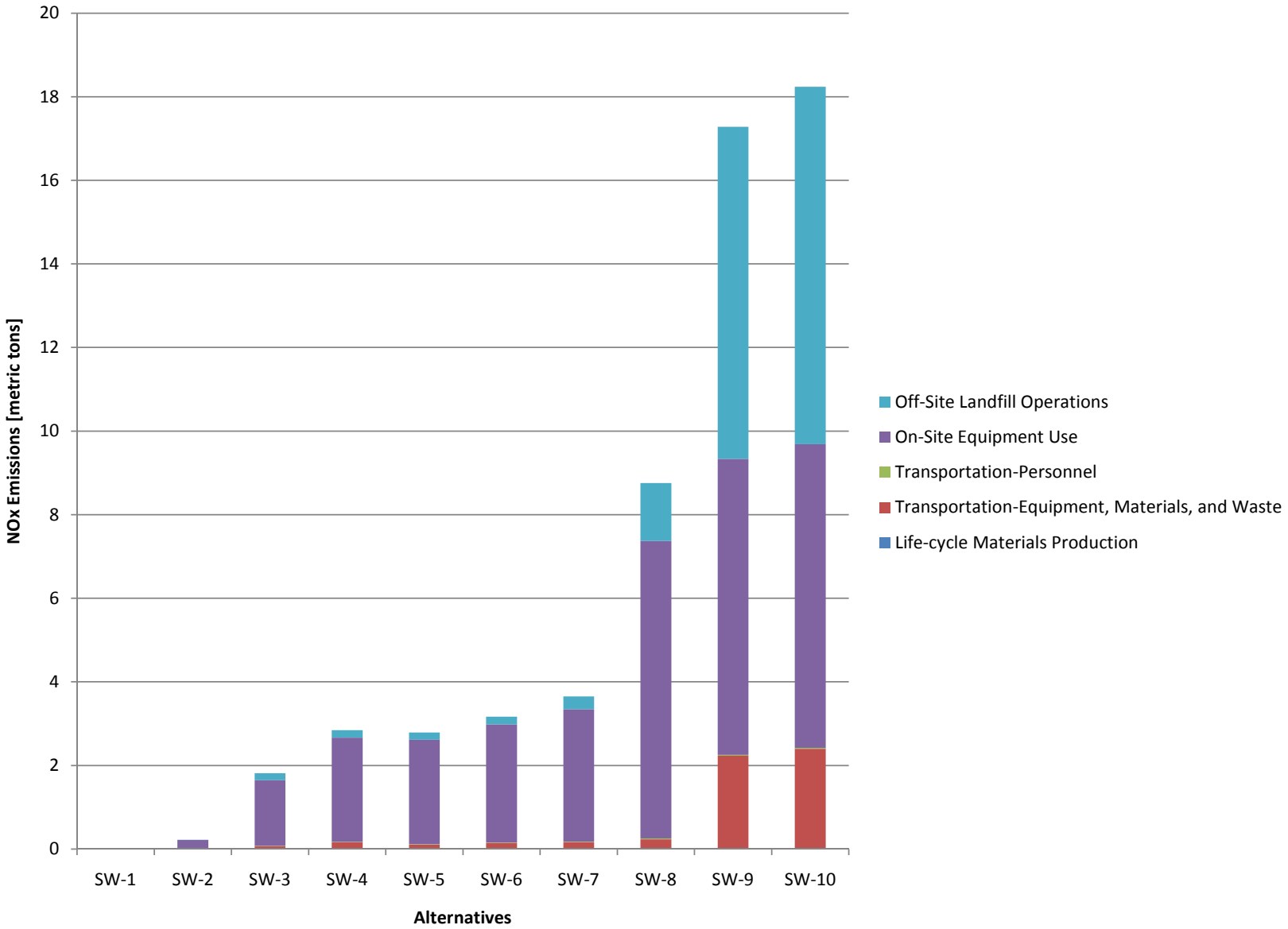


Figure 7-4. Nitrogen Oxides (NO_x) Emissions Estimates by Alternative - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

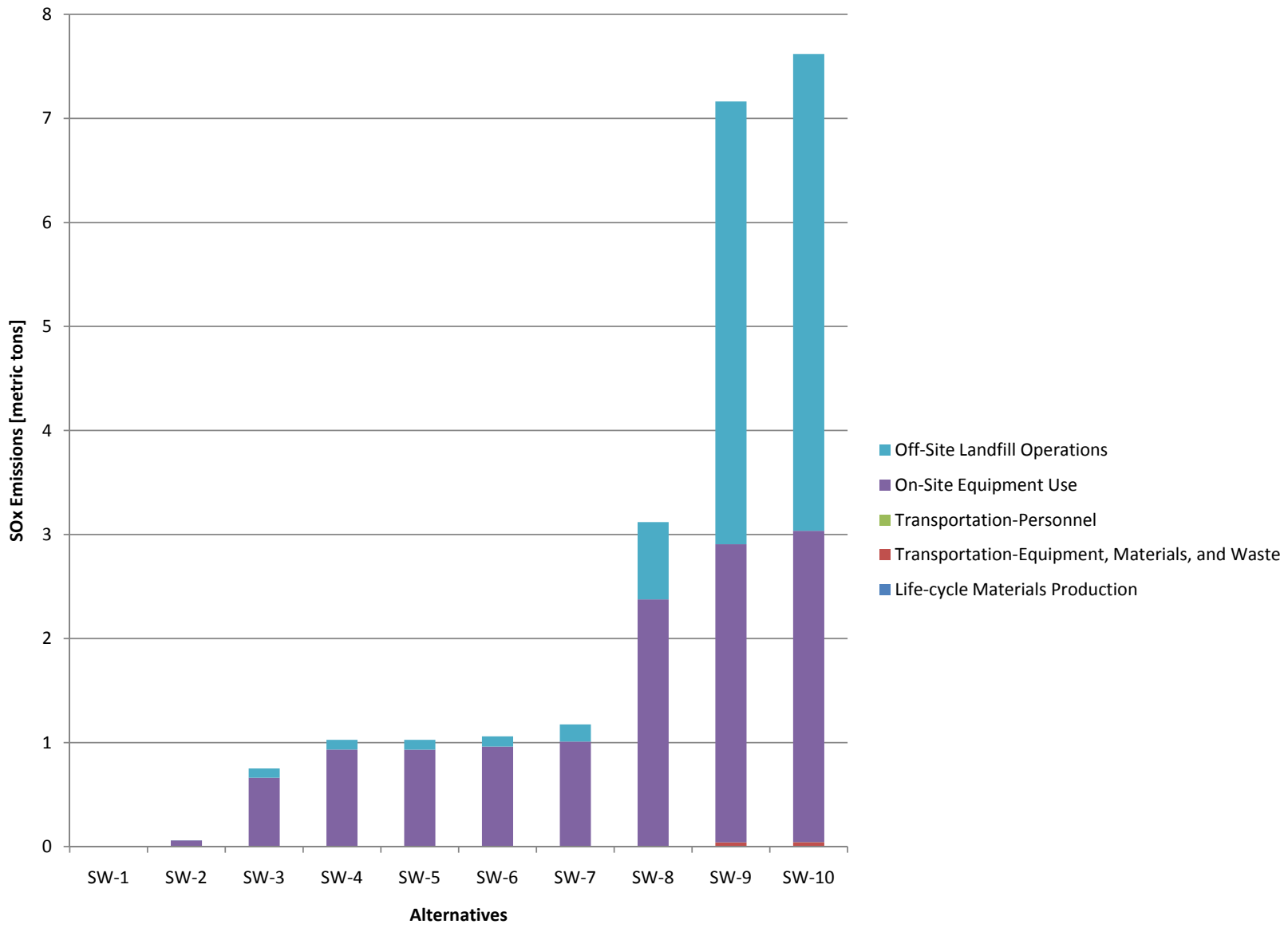


Figure 7-5. Sulfur Oxides (SO_x) Emissions Estimates by Alternative - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

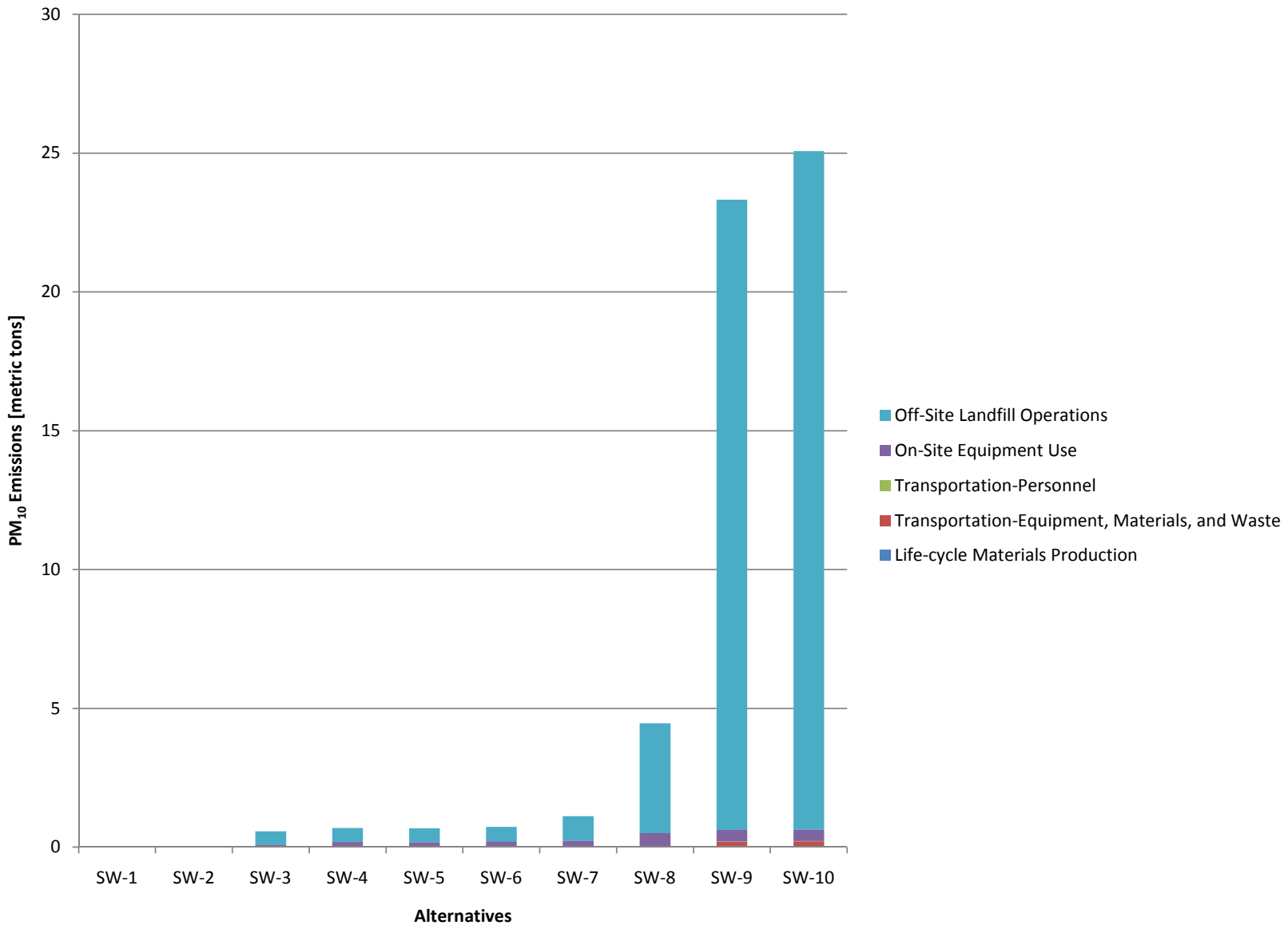


Figure 7-6. Particulate Matter with a Diameter Less than 10 Micrometers (PM_{10}) Emissions Estimates by Alternative - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

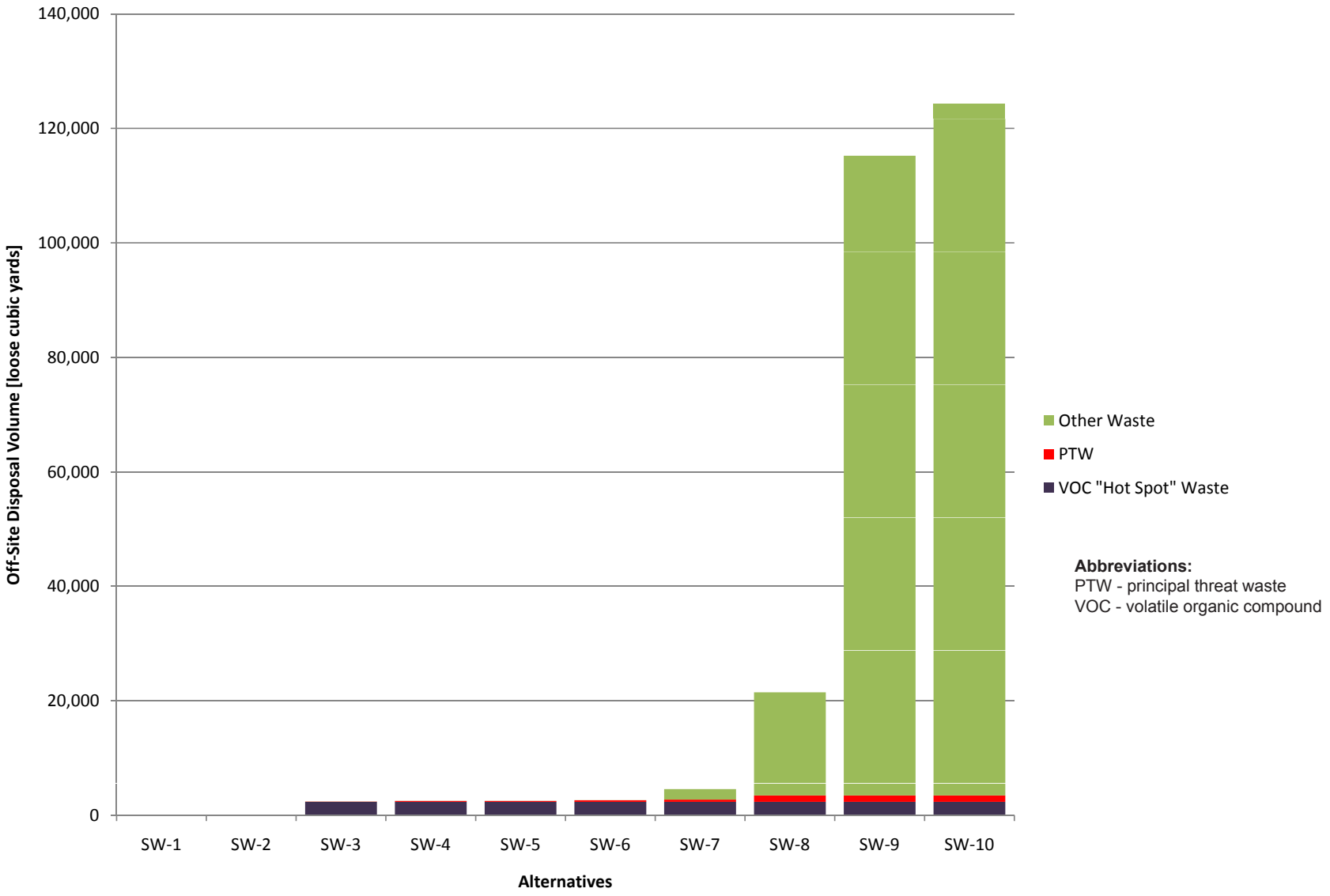


Figure 7-7. Volume of Soil/Solid Waste Sent Off-Site for Disposal by Alternative - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

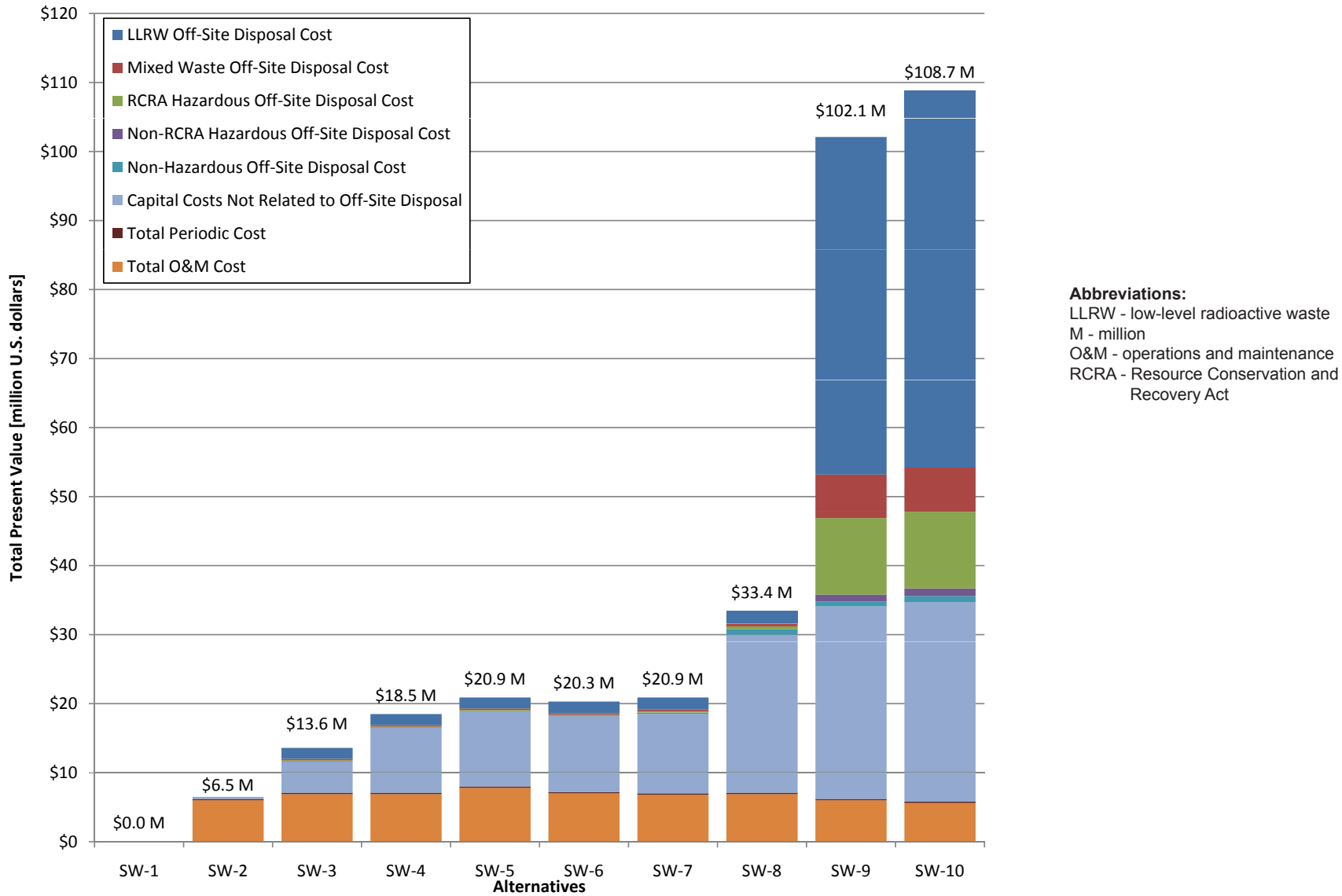


Figure 7-8. Total Present Value of Each Alternative - Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis