

FACILITY DESCRIPTION

ATTACHMENT 1

Pueblo Chemical Depot

Pueblo, Colorado

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This section provides a general description of the Pueblo Chemical Depot (PCD) located in Pueblo County, east of the city of Pueblo, in the southeastern region of Colorado. In accordance with Title 6 Code of Colorado Regulations (CCR) 1007-3 § 100.41(a)(1), Section 1-1, General Description, provides an overview of the PCD hazardous waste management units. Section 1-2, Topographic Map, addresses the PCD topographic map requirements under 6 CCR 1007-3 § 100.41(a)(18). Section 1-3, Location Information, addresses the floodplain location and seismic requirements of 6 CCR 1007-3 § 100.41(a)(11). Section 1-4, Traffic Information, describes the PCD site traffic patterns as required by 6 CCR 1007-3 § 100.41(a)(10).

1-1 GENERAL DESCRIPTION [6 CCR 1007-3 § 100.41(a)(1)]

PCD is a 23,000-acre military installation located east of the City of Pueblo, in the southeastern region of Colorado (**Figure 1-1**)¹ in Pueblo County, Colorado. PCD includes a variety of buildings and structures as well as open and undeveloped prairie. Construction of PCD began in 1942 on former cattle grazing land. The original mission of the Depot was storage of munitions and general supplies. PCD was later assigned to rebuild and repair vehicles and weaponry along with demilitarization of ammunition. In 1988, PCD was identified for realignment under the Base Realignment and Closure (BRAC) program. PCD currently stores a portion of the U.S. mustard chemical agent munitions stockpile, and PCD continues to remediate soil and groundwater contamination in preparation for PCD closure.

The PCD Environmental Management Office (EMO) is tasked with compliance of all federal, state, local, and Army environmental laws, rules, and regulations. The Recovered Chemical Materiel Directorate (RCMD) is tasked with augmenting planned destruction of the PCD chemical weapon stockpile by operating the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) Explosive Destruction System (EDS) site at PCD.

¹ All figures are located at the end of this attachment.

This Permit addresses the treatment of overpacked munitions, Department of Transportation (DOT) bottles, and energetic components (ignition cartridges, propellant) stored at PCD that contain mustard agents (distilled sulfur mustard [HD]/mustard-T mixture [HT]) in two PCAPP EDS units. The PCAPP EDS site is located in the northern portion of PCD. The EDS is a transportable system designed to safely treat/destroy munitions and other items that contain chemical agent fills with or without energetic components. Two configurations of the EDS Phase 2 Unit will be used at PCD, the EDS Phase 2R (P2R) and EDS Phase 2A (P2A). The Containment Vessels for both units perform the same function and are designed, built, and tested to the same criteria. However, there are differences in components and support equipment.

This Permit also addresses the storage of leaking chemical munitions and other mustard agent contaminated liquid-phase and solid-phase wastes in Resource Conservation and Recovery Act (RCRA)-permitted hazardous waste storage units (Igloos G203, G1009, G1107, G1109, G1110, and H1102); the storage of non-explosive agent contaminated liquid-phase and solid-phase hazardous wastes in Container Storage Unit (CSU) H1103; the storage of up to two (2) covered roll-off containers containing up to a total of 50-cubic yards of solid phase hazardous waste in an area adjacent to CSU H1103; and the storage of nonagent-related hazardous wastes in a RCRA-permitted hazardous waste storage unit (Building 540). **Figure 1-2** depicts the locations of permitted hazardous waste storage units G203, G1009, G1107, G1109, G1110, and Building 540 at PCD. **Figure 1-3** depicts the location of the PCAPP EDS site at PCD, which includes CSUs H1102, H1103, and a Roll-off Container Storage Area adjacent to CSU H1103. **Figure 1-4** is the PCAPP EDS Site Plan which shows the location of associated support equipment, support trailers, existing facilities, roads, and access controls. **Figure 1-5** shows the layout for the PCAPP EDS Environmental Enclosures.

1-1a Overview of PCD Hazardous Waste Management and PCAPP EDS Operations

Hazardous wastes have been managed at PCD since October 1980, when the U.S. Environmental Protection Agency (USEPA) Region VIII issued a USEPA Identification Number (EPA ID Number CO8213820725) to PCD. The hazardous wastes managed at PCD are divided into two categories: agent-related wastes and non agent-related wastes. Agent-related wastes include waste chemical munitions and agent-contaminated materials, such as used personal protective equipment (PPE) and spent decontamination solutions. Non agent-related wastes are generated at PCD during environmental remediation activities and industrial support activities such as building and motor vehicle maintenance, small construction projects, and office operations.

PCD stores and manages mustard agent-related wastes in RCRA-permitted hazardous waste management units, G203, G1009, G1107, G1109, G1110, H1102, H1103 and a Roll-off Container Storage Area adjacent to H1103. Non agent-related wastes are stored in Building 540. Chemical munitions stored at PCD contain chemical agent mustard (HD/HT). If an HD or HT chemical munition is suspected to be leaking, the munition is overpacked and stored in one of the following RCRA-permitted hazardous waste management units: G203, G1009, G1107, G1109, or G1110. Material such as PPE or dunnage contaminated from handling leaking munitions is stored in RCRA hazardous waste management unit G1110. CSU H1102 will be used to store hazardous wastes pending treatment in a PCAPP EDS unit. CSU H1103 and the adjacent Roll-off Container Storage Area will be used to store wastes produced from the PCAPP EDS treatment processes and support activities. Hazardous wastes that are not chemical-agent related, such as wastes generated from environmental remediation activities and industrial support activities, are stored in Building 540 for up to 1 year prior to transfer to an offsite permitted treatment, storage, and disposal facility.

1-1a(1) PCAPP EDS and PCD Primary Process and Support Structures

Two EDS units will be used to treat/destroy overpacked munitions, DOT bottles, and other miscellaneous items that are currently stored at PCD that contain mustard agent HD/HT. The purpose of EDS treatment is to deactivate the explosive component (if present), reduce the toxicity of the chemical fill, and decontaminate item or munition casing fragments before offsite shipment to a permitted treatment, storage, and disposal facility for further treatment (as applicable) and/or ultimate disposal. Each of the two EDS units will be housed inside a separate Environmental Enclosure on a reinforced concrete pad. Detailed information about the EDS support equipment and layout of the major components of the EDS units are described in **Attachment 8**, EDS Process Description.

Nine permitted hazardous waste storage units are located at PCD: G203, G1009, G1107, G1109, G1110, H1102, H1103, a Roll-off Container Storage Area adjacent to H1103, and Building 540. G203, G1009, G1107, and G1109 are existing concrete munition storage igloos comprising four walls, floor, and ceiling that are used to store leaking chemical-filled munitions in overpacks pending treatment at a permitted treatment, storage, and disposal facility. G1110 is also an existing concrete munition storage igloo and is used to store material such as PPE or dunnage contaminated from handling leaking munitions, along with leaking chemical-filled munitions in overpacks pending treatment at a permitted treatment, storage, and disposal facility. CSUs H1102, H1103, and a Roll-off Container Storage Area adjacent to H1103 are located at the PCAPP EDS site. CSUs H1102 and H1103 are existing earth-covered concrete storage igloos comprising four walls (one with a roll up door), floor, and ceiling. CSU H1102, located within the

PCAPP EDS fence line, will be used to store items pending treatment in an EDS unit. The items will be transferred to CSU H1102 from the PCD permitted hazardous waste storage igloos (G203, G1009, G1107, G1109, and G1110). CSU H1103 will be used to store wastes generated from the PCAPP EDS treatment process and support activities. CSU H1103 is located outside the PCAPP EDS fence line east of CSU H1102. Building 540 is comprised of four walls, floor, and ceiling that is used to store non agent-related wastes generated in the administrative and warehouse areas and during environmental remediation activities. These wastes may include waste paint and thinners; wastes from the onsite laboratory used to analyze explosives constituents; waste solvents; waste batteries, battery acid, and contaminated soils from the remediation of Solid Waste Management Units (SWMUs).

1-1b Hazardous Waste Management Units

The hazardous waste management units addressed in this RCRA Permit consist of miscellaneous treatment units (X99) and container storage (S01) units. Specifically, these waste management units are:

- Two EDS units in Environmental Enclosures (miscellaneous treatment X99)
- Igloos G203, G1009, G1107, G1109, G1110 (container storage S01)
- CSUs H1102 and H1103, and a Roll-off Container Storage Area adjacent to H1103 (container storage S01)
- Building 540 (container storage S01).

In addition to the hazardous waste management units, there may be less than 90-day hazardous waste accumulation areas and satellite accumulation areas at PCD, including the PCAPP EDS site. In accordance with the generator standards of 6 CCR 1007-3 § 262.34, the less than 90-day and satellite accumulation areas are operated and used for temporary accumulation of waste, pending shipment to a permitted treatment, storage, and disposal facility. Because these temporary hazardous waste accumulation areas do not require a hazardous waste permit for operation, they are not discussed in further detail in this Permit. However, locations and descriptions of these temporary waste accumulation areas are included and maintained in the onsite copy of the PCD contingency plan.

1-1c Hazardous Wastes Managed

Some of the RCRA-permitted hazardous waste management units at PCD are used to store overpacked, leaking munitions that contain HD and HT, along with associated agent-related wastes. Potential agent-related wastes to be stored at PCD will be placed in RCRA-permitted hazardous waste container storage units G203, G1009, G1107, G1109, and G1110, and may include the following wastes:

- Wood pallets, metal banding, bolts, and nails
- Plastic bags or plastic shrouding
- Liquid-exposed PPE such as suits, gloves, boots, and tape
- Decontamination solutions
- Sorbents and other spill cleanup materials
- Laboratory waste and sampling debris associated with leaking munitions such as glassware and gloves
- Miscellaneous debris including hoses, meters, rags, and cords
- Soil and sediment.

CSU H1102 will be used for the storage of overpacked, leaking munitions, DOT bottles, and other miscellaneous items that are currently stored at PCD that contain mustard agent HD/HT. Potential hazardous wastes produced during PCAPP EDS site operations that may require storage in CSU H1103 and the Roll-off Container Storage Area adjacent to H1103, and/or shipment to a permitted treatment, storage, and disposal facility for further management include the following:

- Neutralent and rinsates
- Used decontamination solution and containment pan liquids
- Decontaminated metal parts and fragments

- Potentially agent-contaminated dunnage/packing material
- Spent carbon from the Environmental Enclosure Air Filtration System (AFS) and CSU H1102 Igloo Containment System
- Spent prefilters and high efficiency particulate air (HEPA) filters from the Environmental Enclosure AFS
- Used PPE
- Miscellaneous solid and liquid wastes as a result of support, maintenance, and cleanup activities
- Laboratory solid waste
- Laboratory liquid waste
- Grayloc[®] Seal and O-rings
- Unexploded or untreated energetics or propellant material (unlikely to occur but could be generated)
- Empty containers
- Boiler blowdown solids.

Potential nonagent-related wastes to be stored at PCD in RCRA-permitted hazardous waste storage unit, Building 540, may include the following waste streams:

- Waste paint and thinners
- Wastes from the onsite restoration laboratory used to analyze explosives constituents

- Waste solvents
- Waste batteries and battery acid
- Contaminated soils, sediment, or water from the remediation of SWMUs
- Spent carbon from groundwater treatment systems
- Used filters from the Interim Corrective Action Groundwater Remediation System (ICAGRS)
- Waste starter fluids
- Used PPE
- Universal wastes such as fluorescent bulbs.

1-2 TOPOGRAPHIC MAP

1-2a General Requirements [6 CCR 1007-3 § 100.41(a)(18) and 100.41(d)(1)(i)]

Topographic maps showing the locations of hazardous waste management units G203, G1009, G1107, G1109, G1110, and Building 540 at PCD are provided as **Figures 1-6** and **1-6A**. A topographic map showing the location of the PCAPP EDS site (which includes the EDS units and associated CSUs) at PCD is provided as **Figure 1-6B** and includes a wind rose, surface water and typical drainage patterns, as well as the 100-year floodplain hazard area. **Figure 1-6C** provides a detail view of the PCAPP EDS site (1 foot = 200 feet scale). An expanded topographic map showing additional topography of PCD, including delineation of the depot, is provided as **Figure 1-7**. **Figure 1-7** is a U.S. Geological Survey topographic map of North Avondale, Colorado, that depicts PCD. The topography of PCD is flat to gently sloping prairie. The PCD hazardous waste management units G203, G1009, G1107, G1109, and G1110 and the PCAPP EDS site are located in relatively flat areas approximately 35 feet in elevation above the Arkansas River. PCD hazardous waste management unit Building 540 is also located in a relatively flat area. Elevations of approximately 4,500 feet above mean sea level occur along the Arkansas River, increasing slowly to over 5,000 feet to the west, north, and south.

Figure 1-8 shows permitted facilities, surface water, fence lines, and roads and access controls. The figure also depicts the PCD access points. Legal boundaries for PCD and the location of SWMUs at PCD are also shown on **Figure 1-8**.

The PCD hazardous waste management units are located within PCD legal boundaries shown in **Figure 1-2**. The PCAPP EDS site is located within PCD legal boundaries shown in **Figure 1-3**. The PCD hazardous waste management units and the PCAPP EDS site are not located in a 100-year floodplain. The 100-year floodplain is discussed further in Section 1-3. There are withdrawal and injection wells within the boundaries of PCD as shown on **Figures 1-8, 1-8A, 1-8B, and 1-8C**. Additional wells are depicted as they pertain to remediation areas. **Figure 1-8** shows the locations of SWMUs at PCD.

PCD is bordered on the south by the Atchison, Topeka, Santa Fe and the Missouri Pacific Railroad, with the Arkansas River about 1/2 mile further south. Three small creeks, Haynes, Boone, and Chico, traverse PCD and drain southward toward the Arkansas River. Land use surrounding PCD is primarily undeveloped grazing land to the north, west, and east with scattered rural residences. U.S. Highway 50/CO Highway 96, a major east-west highway, is located 1/2 mile south of PCD. The Arkansas River is about 1.5 miles to the south. Four small rural communities (Avondale, North Avondale, Orchard Park,

and Boone) are also located within 4 miles of PCD's southern boundary. Other land use south of PCD includes rangeland and cultivated crop and pasture land along the Arkansas River.

1-3 LOCATION INFORMATION

1-3a Seismic Standard [6 CCR 1007-3 § 100.41(a)(11)(ii) and § 264.18(a)]

The PCD hazardous waste management units and the PCAPP EDS site (located in Pueblo County) are not located in any of the political jurisdictions listed in 6 CCR 1007-3 § 264 Appendix VI, and there are no political jurisdictions listed for Colorado in the corresponding 6 CCR 1007-3 § 264.18(a) regulation.

Based on published geologic information, the PCD hazardous waste management unit locations and the PCAPP EDS site location meet the state seismic location standards because the sites are not located within 1,000 feet of a fault that has had displacement in Holocene time. The PCD hazardous waste management units and PCAPP EDS site are located at the southern margin of the Denver Basin within the Great Plains seismotectonic province, east of the southern Rocky Mountains. Known active faults in the region include the M6.8 Cheraw Fault located 41 miles from the site, the M6.9 Rampart Range Fault located 45 miles from the site, and the M7.0 Sangre de Cristo Fault located 76 miles from the site. In general, the region is considered an area of low seismicity. Notable earthquakes occurred in 1870, 1882, 1966, and 1967, with the strongest shaking in the range of a Modified Mercalli Index of V (on a scale of I to XII). This earthquake occurred on December 4, 1870, at a location approximately 19 miles northeast of the site. For the engineering liquefaction evaluation, a peak ground acceleration surface equivalent to 0.16 g and the magnitude 5.79 were used (Geomatrix, 2001).

According to the United States Geological Society (USGS), the earthquake that affected Southern Colorado in August 2011 occurred in Trinidad, Colorado, approximately 80 miles or 448,800 feet from the PCD hazardous waste management units:

“The shock of 23 August 2011 occurred as the result of normal faulting, at a shallow depth of focus. The preliminary location, depth, and style of faulting for the 2011 earthquake are very similar to the earthquakes in the previously-cited 2001 swarm. The 2001 swarm did not occur on a mapped geologic fault. The north or north-northeast strike of the causative faults of the largest 2001 and 2011 earthquakes are consistent with the east-west extension that has formed the Rio Grande rift to the west of the epicentral region.” (USGS <http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/usc0005idz.php#summary>; USGS Preliminary Damage Report of the August 22, 2011 Mw

5.3 Earthquake near Trinidad, CO: <http://geosurvey.state.co.us/hazards/Earthquakes/Documents/Preliminary%20Damage%20Report%20of%20the%20Mw%205-3%20Trinidad%20Earthquake.pdf>; USGS Magnitude 5.3 – COLORADO 2011 August 23 05:46:19 UTC: <http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/usc0005idz.php#summary>). No further geologic studies to address the occurrence and age of faulting in the PCD hazardous waste management units vicinity are necessary to fulfill siting requirements.

1-3b Floodplain Standards [6 CCR 1007-3 § 100.41(a)(11)(iii) and (a)(18)(ii)]

The PCD hazardous waste storage units and the PCAPP EDS site are not located in the 100-year floodplain, according to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Web site, Flood Insurance Rate Map for Pueblo, CO, dated September 29, 1989. **Figure 1-6** shows the 100-year floodplain boundary relative to the PCD hazardous waste storage units. **Figure 1-6B** shows the 100-year floodplain boundary relative to the PCAPP EDS site.

PCD is located in the drainage basin of the Arkansas River. PCD occupies about 36 square miles of rolling upland terrain that ranges between 4,550 and 4,800 feet in elevation and slopes southward at about 25 feet per mile. Three creeks drain the installation. Chico Creek, an intermittent stream, drains the western portion. Boone Creek, an ephemeral stream, drains the central portion. Haynes Creek, a perennial stream, drains the eastern portion. The three creeks drain south into the Arkansas River. In **Figures 1-6** and **1-6B** the shaded areas show special flood hazard areas. The PCAPP EDS site and none of the PCD hazardous waste storage units are located within or near the 100-year floodplain (flood hazard area).

1-4 TRAFFIC INFORMATION [6 CCR 1007-3 § 100.41(a)(10)]

External Access

The entrance road to PCD is an exit off of U.S. Highway 50/CO Highway 96. Although road surfacing and load bearing capacity of U.S. Highway 50/CO Highway 96 is governed by the Colorado Department of Transportation (CDOT), the approximate one-mile roadway east of the cloverleaf up to the PCD main entrance (southern entrance) is maintained by PCD. This portion of roadway is capable of HS-20 loading: 18,000-pound maximum axle load; 32,000-pound maximum axle group; and 72,000-pound maximum vehicle weight (rating per American Association of State Highway and Transportation Officials). An additional access control point was built on the north end of the installation for access

control to the PCAPP. The access control point serves as a secondary entrance to PCD but is not utilized by traffic to and from the six PCD hazardous waste storage units in this Permit. The southern access control point (PCD main entrance) and the access road from the PCD main entrance to the six PCD RCRA-permitted hazardous waste storage units is the only access utilized by traffic to and from the six PCD RCRA-permitted hazardous waste storage units.

Internal Access

A system of interior roads as well as the approximate one-mile roadway east of the cloverleaf on U.S. Highway 50 that leads to the PCD main entrance (southern entrance) is maintained by PCD. About 170 total miles of roads are present, most of which are gravel-lined or paved and capable of the following highway loading: HS-20 loading: 18,000-pound maximum axle load; 32,000-pound maximum axle group; and 72,000-pound maximum vehicle weight (rating per American Association of State Highway and Transportation Officials). Traffic within the installation is controlled by stop signs.

During an average day, about 300 to 350 cars and trucks pass through the gate. Vehicles are primarily cars, vans, SUVs, pick-up trucks, and semi-trucks.

PCAPP EDS Transportation Routes

The PCAPP EDS site will have three separate transportation routes. Two routes are internal, Chemical Limited Area (CLA) (G-Block) transportation routes. One internal route is to move items to be destroyed from the PCD RCRA-permitted storage igloos to the PCAPP EDS site CSU H1102. The other internal CLA route will be used to move items from EDS CSU H1102 to a PCAPP EDS Environmental Enclosure (see **Figure 1-9**). This road is controlled via CLA (G-Block) gate entry and is not accessible to the public. The external route will be used to move waste, equipment, and supplies between the PCAPP EDS site and the PCD northern entrance (see **Figure 1-10**).

Items to be processed at the PCAPP EDS site will be transported from the PCD RCRA-permitted storage igloos in Modified Ammunition Vans. Storage delivery is expected to occur approximately once per week during operations. Personal vehicles will be parked outside the PCAPP EDS site fence lines, and therefore, will not affect traffic within the operational site.

In general, roads that will be used to transport hazardous wastes to and from the PCAPP EDS site are gravel-lined or paved and capable of highway loading, HS-20 loading: 18,000-pound maximum axle

load; 32,000-pound maximum axle group; and 72,000-pound maximum vehicle weight (rating per American Association of State Highway and Transportation Officials).

Items will be brought to an Environmental Enclosure using material handling equipment such as forklift, truck, or other appropriate vehicle to a PCAPP EDS Environmental Enclosure for treatment in an EDS unit.

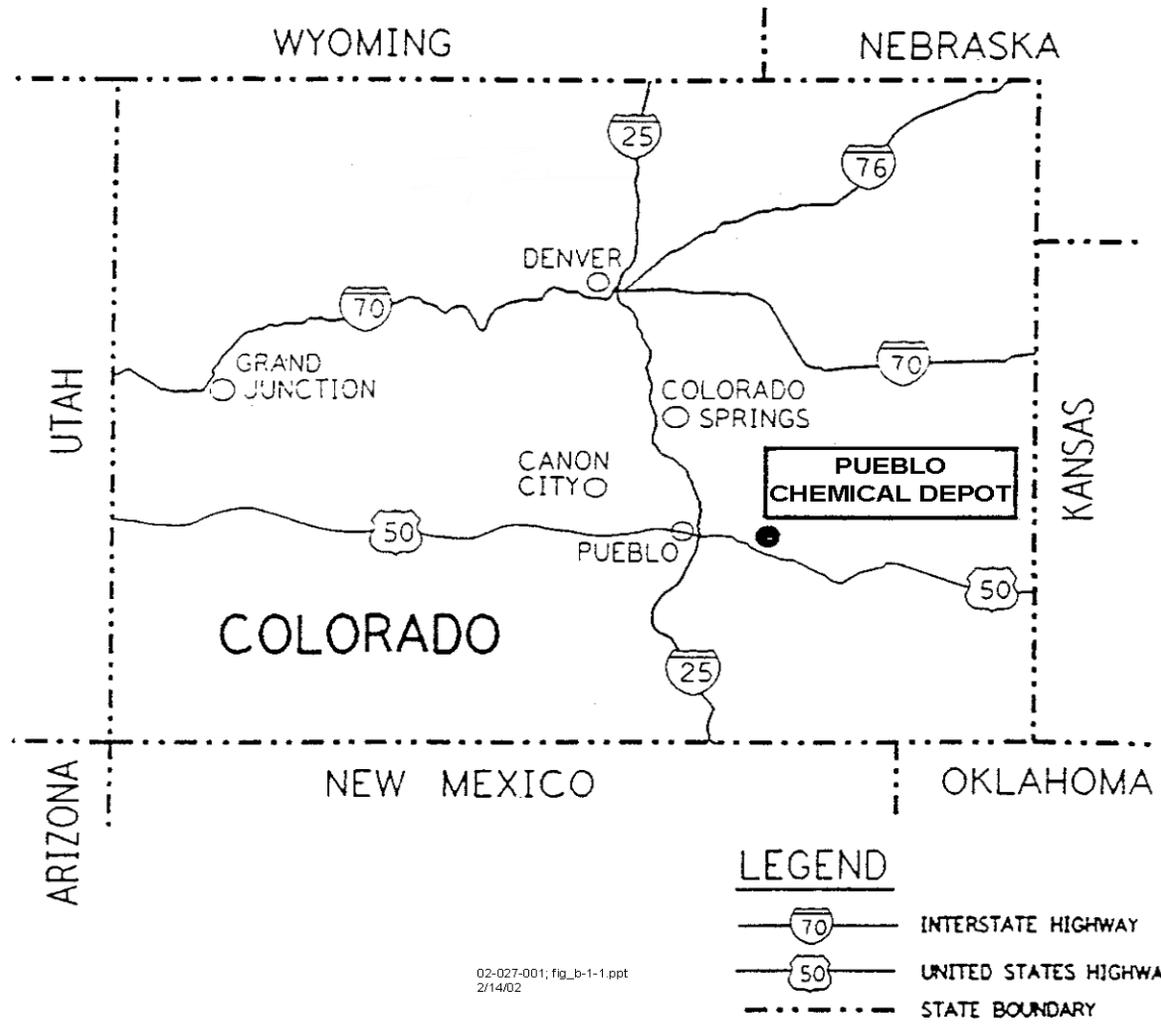
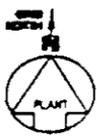


Figure 1-1. Location of PCD

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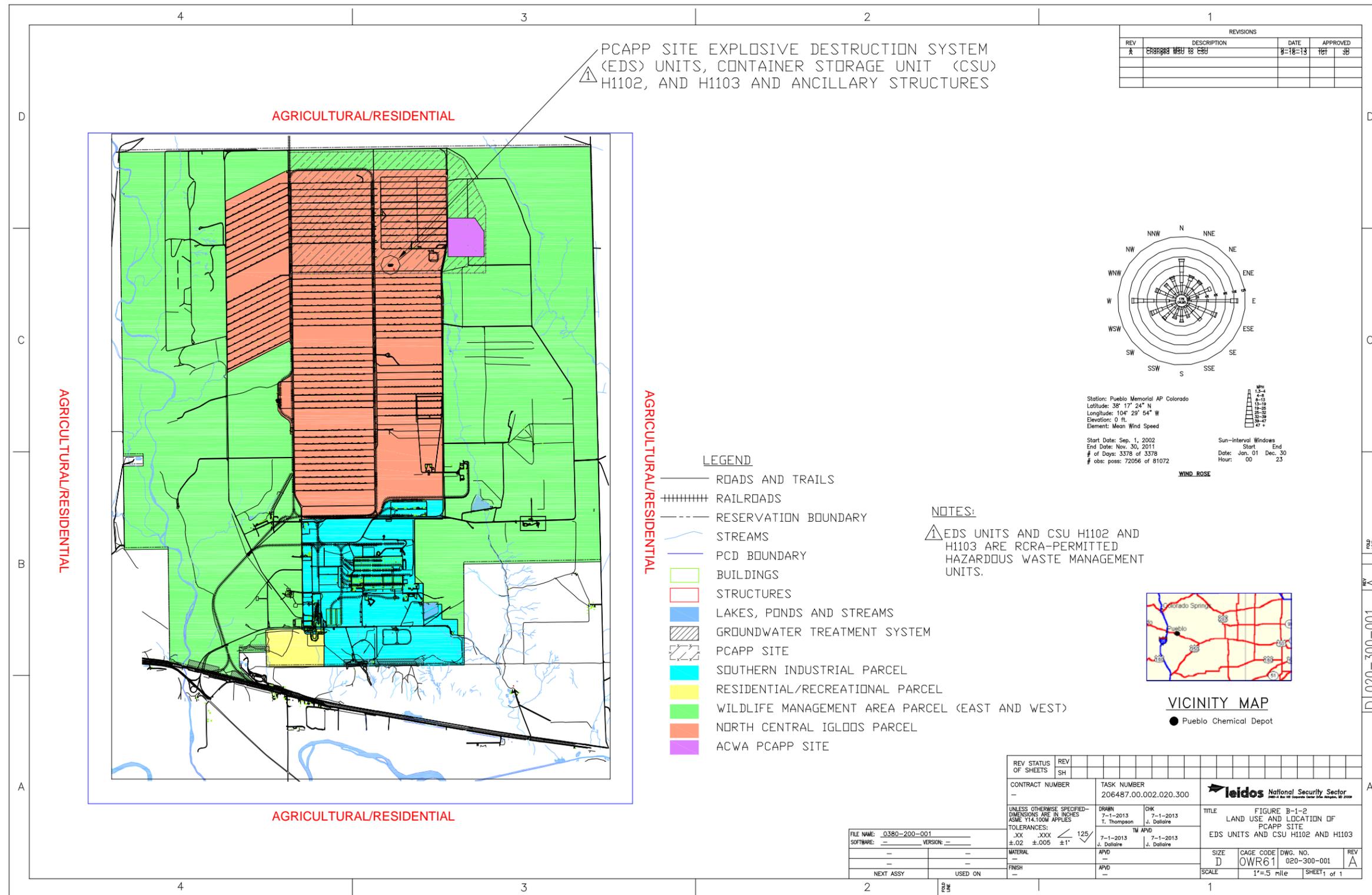


Figure 1-3. Land Use and Location of PCAPP EDS Site

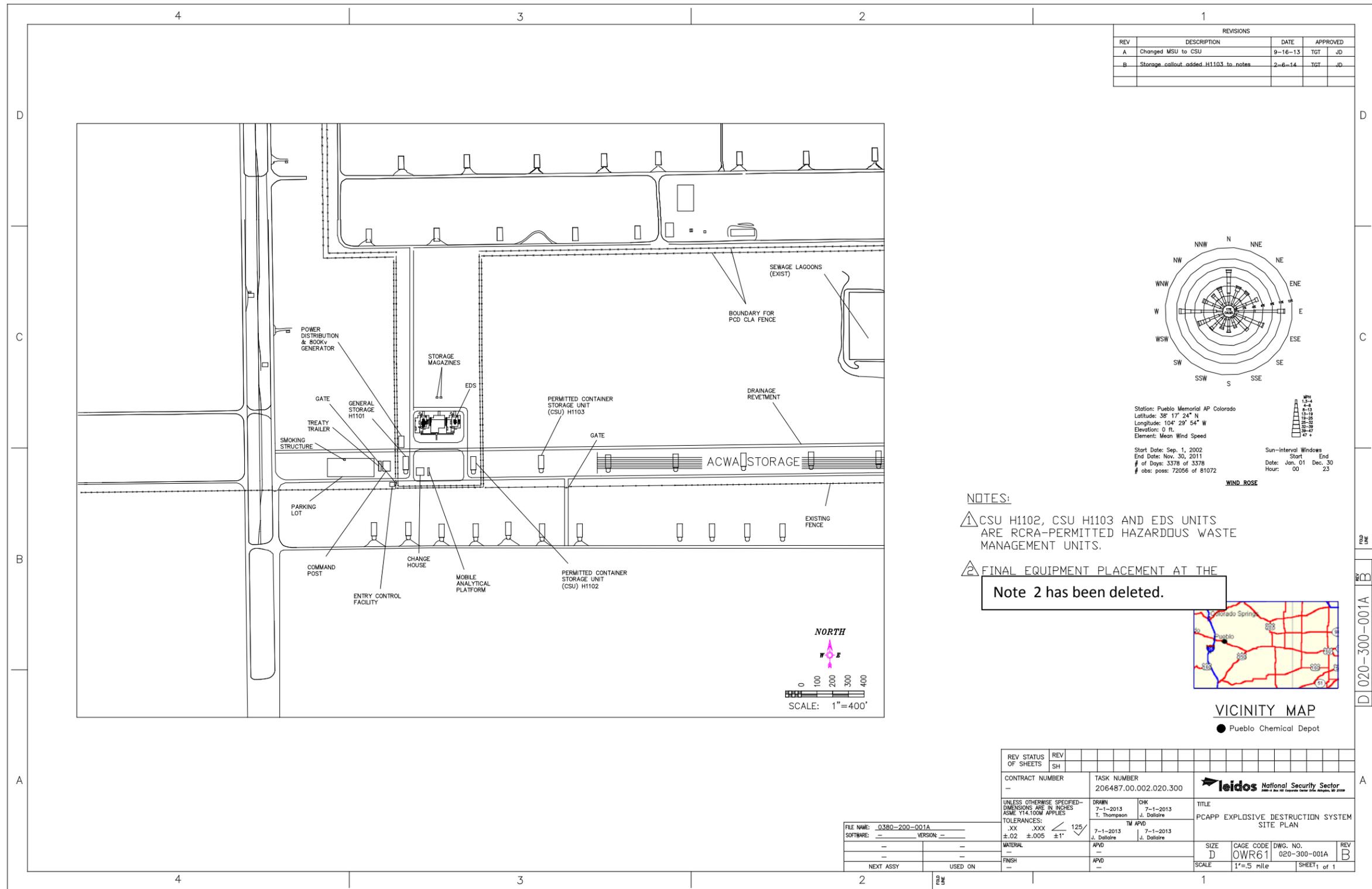


Figure 1-4. PCAPP EDS Site Plan

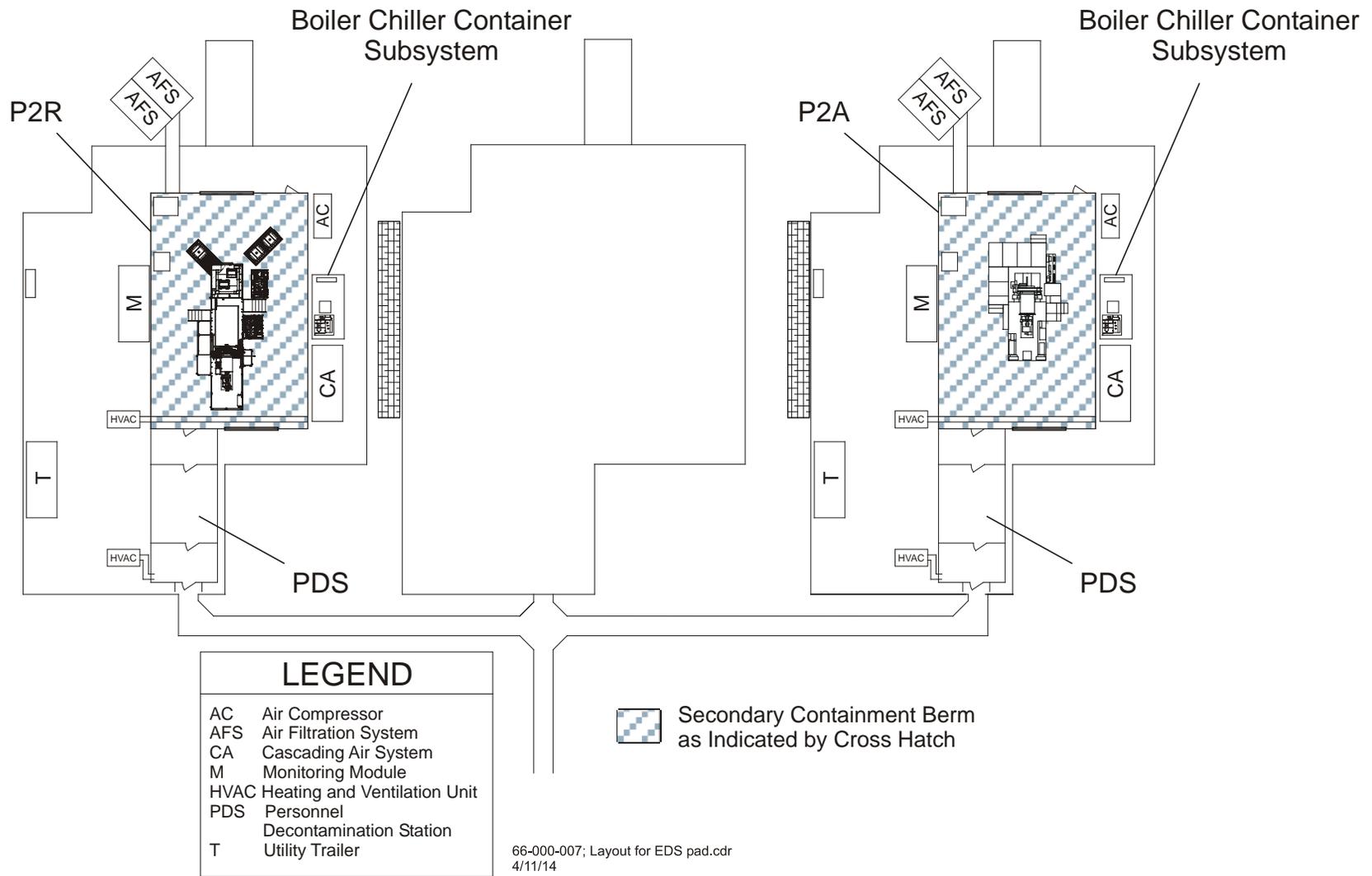


Figure 1-5. Layout for the PCAPP EDS Environmental Enclosures