



February 2, 2024

Craig Myers
On-Scene Coordinator
U.S. Environmental Protection Agency Region 8
1595 Wynkoop St.
Denver, CO 80202

**Subject: Letter Report
Castle Pines Abandoned Drum
560 Castle Pines Parkway, Castle Pines, Colorado, 80108
U.S. EPA Region 8 START V, Contract No. 68HE0823F0059
Technical Direction No: 2359-2312-08**

Dear Mr. Myers:

The Tetra Tech, Inc. Superfund Technical Assessment and Response Team (START) is submitting this trip report for the Castle Pines Abandoned Drum Site (the Site) located in Castle Pines, Douglas County, Colorado. This report summarizes emergency response activities conducted at the Site. The overall scope of this technical direction (TD) was to provide technical assistance, including site documentation, drum categorization, and hazard categorization testing.

SITE LOCATION AND DESCRIPTION

The Site is located at 560 E Castle Pines Pkwy in Castle Pines, Colorado (Figure 1 in Enclosure 1). The site is in a parking lot that is currently occupied by several commercial businesses (Figure 2 in Enclosure 1).

On December 16, 2023, the Environmental Protection Agency (EPA) was notified by the South Metro Fire Department about one 55-gallon abandoned drum in a parking lot. The drum was less than half full of an unknown substance.

EMERGENCY RESPONSE ACTIVITIES

EPA, START and Environmental Restoration LLC, the EPA Emergency and Rapid Response Services (ERRS) contractor, mobilized to the Site on December 16, 2023, to conduct emergency response activities, including the identification and assessment of the drum condition and drum contents, transfer of contents into a shippable drum, and removal of drums for proper disposal off-site. Additionally, START performed photographic documentation (Enclosure 2) and logbook documentation (Enclosure 3); the photographs and logbook file were uploaded to the response.epa.gov website. A chronological summary of removal activities is provided below.

December 16, 2023

- Upon arrival at the Site, START assessed for immediate hazards, the drum condition, and perimeter of the exclusion zone. Noticeable staining marked the pavement, starting approximately 50 feet west of the area where the drum was abandoned and ended within approximately 5 feet of the abandoned drum location. A faint petroleum odor was detected near the staining. ERRS placed an absorbent material on the stained area and marked the exclusion zone.
- START's initial assessment of the drum included screening for:
 - Radiation with a gamma microR ratemeter;
 - Multi-gas meters with the following sensors: oxygen, lower explosive limit, hydrogen sulfide, photoionization detector (PID) measuring volatile organic compounds (VOC), hydrogen cyanide, ammonia, chlorine, carbon monoxide, and sulfur dioxide;
 - Toxic vapor analyzer (TVA) with a PID and flame ionization detector (FID) measuring VOCs and combustible vapors; and
 - Chemical screening with a Fourier transform infrared (FTIR) and Raman analyzer.
- START conducted an initial screening of the unopened drum around the drum sides and bung closures. The TVA and multi-gas meter had low-level detections on both the FID and PID for VOC and combustible vapors. No other detections on the multi-gas monitors were observed. Detections observed on the radiation meter were at background. Initial screenings between the FTIR and Raman analyzers were inconclusive, possibly due to the analysis being performed on the drum's uneven surface.
- START opened the drum and screened the headspace of the drum with both multi-gas monitors and the TVA. The initial TVA readings on the FID were greater than 10,000 parts per million (ppm). The FID detections remained elevated following the opening of the drum. The initial multi-gas VOC readings of the headspace rapidly increased to over 10,000 ppm, so the meter was temporarily removed to avoid detector saturation. Following the opening of the drum, the measured VOC readings decreased rapidly. No other detections on the multi-gas monitors were observed.
- An aliquot was collected from the drum for field screening on a Fourier transform infrared (FTIR) and Raman analyzer. Both detectors indicated the liquid was a petroleum product (specifically diesel). The sample was a neon pink, single phase, low-viscosity fluid.
- START further tested the sample with hazard categorization field tests (Table 1 in Enclosure 4).
- The original drum was determined to be unshippable because the bung closure was visibly damaged. ERRS transferred the contents from the original drum into a new, shippable container.
- After all assessment and field tests were conducted, ERRS collected the absorbent material from the

pavement to be properly disposed of off-site.

- All containers were removed and taken off-site for proper disposal at the end of the emergency response.

HAZARD CATERGORIZATION ACTIVITIES

Hazard categorization testing was conducted to identify the hazard class and disposal requirements of the drum contents. Enclosure 4 provides a table summarizing the hazard categorization test results (Table 1 in Enclosure 4).

CLOSING

This report was prepared by Tetra Tech START for EPA. Any questions concerning the findings of this report should be directed to Craig Myers by email at Myers.Craig@epa.gov.

Sincerely,

Maura McAleese
START V TD Manager

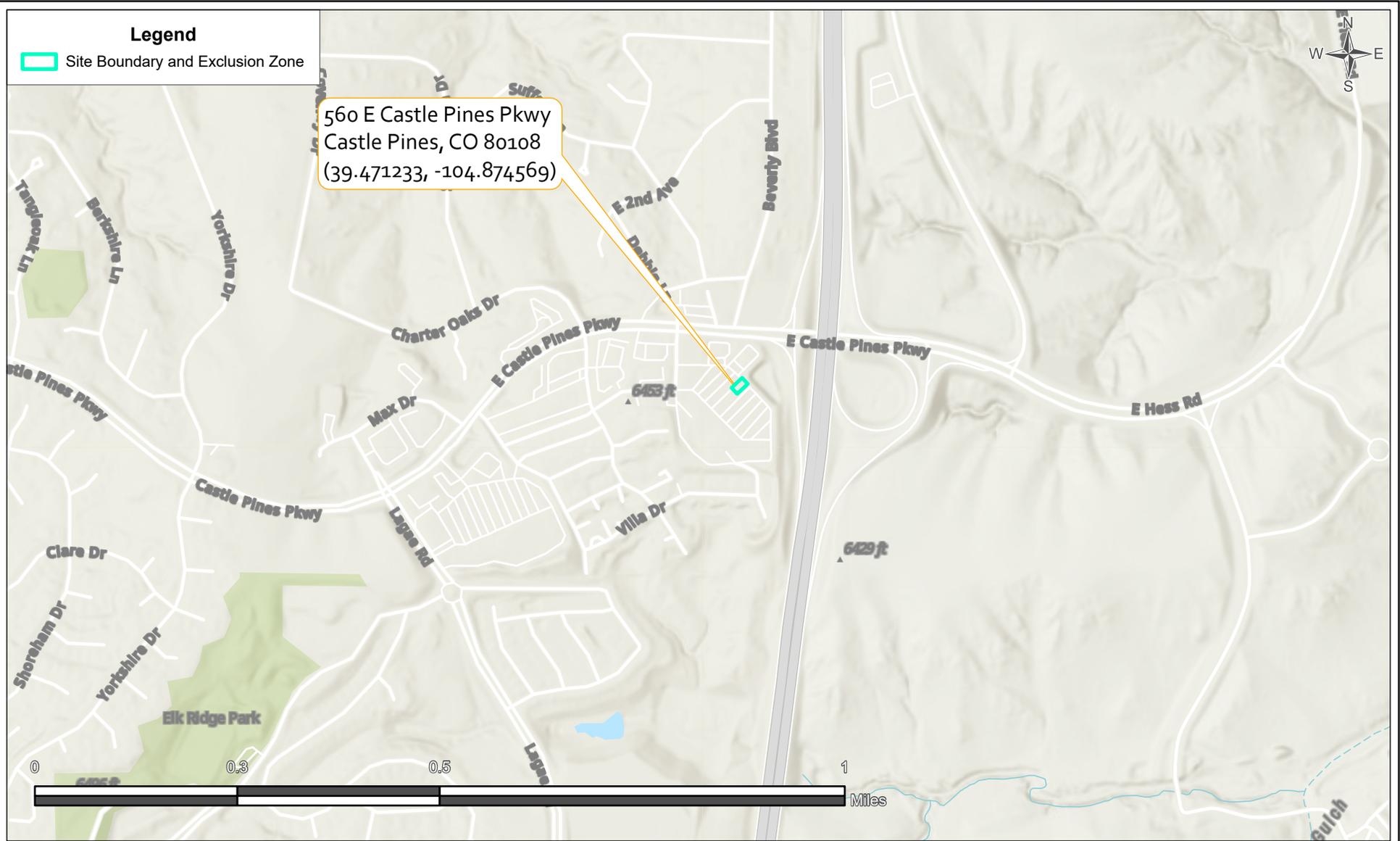
Enclosures (4)

cc: Clayton Longest, START V Document Control Coordinator

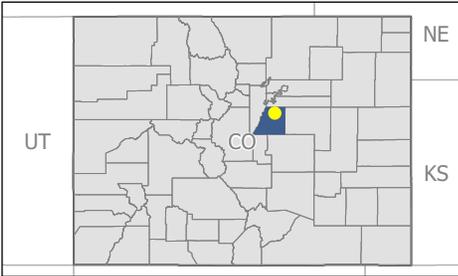


TETRA TECH

ENCLOSURE 1
FIGURES



Source:
 Background: ESRI World Topographic Basemap
 Locations: EPA Region 8 START V (Tetra Tech)
 Streams: USGS NHD Cached REST service
Spatial Reference: WGS 1984 Web Mercator Auxiliary Sphere
 Coordinate System




 United States
 Environmental
 Protection Agency

 Region 8 START V
 TD: 2359-2312-08


TETRA TECH

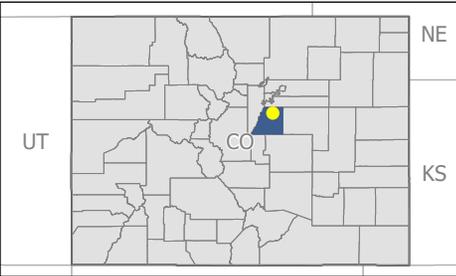
 Analyst: M. Caldwell
 Date: 1/5/2024

Castle Pines Abandoned Drum
 Castle Pines, Douglas County, Colorado

Figure 1
Site Location



Source:
 Background: ESRI Bing Aerial Hybrid Basemap
 Locations: EPA Region 8 START V (Tetra Tech)
 Parcel/Site Boundary: Douglas County GIS
 Spatial Reference: NAD 1983 StatePlane Colorado Central FIPS
 0502 Feet
 Coordinate System



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Analyst: M. Caldwell
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Castle Pines Abandoned Drum
 Castle Pines, Douglas County, Colorado

Figure 2
Site Layout



TETRA TECH

ENCLOSURE 2
PHOTOGRAPH LOG

Project Name:
Castle Pines Abandoned Drum

Site Location:
Castle Pines, Colorado

Project No.:
103X903523F0059231208

Date/Time Taken:	12/16/2023 10:18:00 AM	
Photographer:	leyoub_Patrick	
Latitude:	39.4712391	
Longitude:	-104.8745726	
Photo Direction:	NNE	
Category:	Emergency Response	
Photo Description: Initial exclusion zone set up by local agency around the unknown abandoned drum. Staining on asphalt is suspected petroleum contamination.		
Photo Name: Photos-20231218-173026.JPG		

Date/Time Taken:	12/16/2023 3:05:00 PM	
Photographer:	leyoub_Patrick	
Latitude:	39.4712391	
Longitude:	-104.8745726	
Photo Direction:	NNE	
Category:	Emergency Response	
Photo Description: START monitoring around closures on the top of the abandoned drum to assess for physical and chemical hazards prior to opening.		
Photo Name: Photos-20231218-172532.PNG		

Project Name:
Castle Pines Abandoned Drum

Site Location:
Castle Pines, Colorado

Project No.:
103X903523F0059231208

Date/Time Taken:	12/16/2023 3:05:00 PM
Photographer:	leyoub_Patrick
Latitude:	39.4712391
Longitude:	-104.8745726
Photo Direction:	N
Category:	Emergency Response
Photo Description:	View of the contents from inside the abandoned drum from the bung closure.
Photo Name:	Photos-20231218-173142.JPG



Date/Time Taken:	12/16/2023 3:07:00 PM
Photographer:	leyoub_Patrick
Latitude:	39.4712391
Longitude:	-104.8745726
Photo Direction:	N
Category:	Emergency Response
Photo Description:	Close-up view of the condition of the second bung closure located on the top of the abandoned drum. Bung closures are threaded plugs on drums to create liquid-tight seals that prevent dirt, dust, and contaminants from entering, as well as prevent material from leaking out of the drum during movement and handling. The bung and threads on the drum were damaged; therefore, the drum was not in condition to be shipped.
Photo Name:	Photos-20231218-175716.JPG



Project Name:
Castle Pines Abandoned Drum

Site Location:
Castle Pines, Colorado

Project No.:
103X903523F0059231208

Date/Time Taken:	12/16/2023 3:39:00 PM
Photographer:	leyoub_Patrick
Latitude:	39.4712391
Longitude:	-104.8745726
Photo Direction:	ENE
Category:	Emergency Response
Photo Description:	Thermal field test performed on the sample from the abandoned drum showing ignitable vapors. The vehicle is several feet away from the test and is being used to shield the field testing from the wind as well as provide a dark backdrop to enable better flame color differentiation.
Photo Name:	Photos-20231220-143434.PNG



Date/Time Taken:	12/16/2023 3:56:00 PM
Photographer:	leyoub_Patrick
Latitude:	39.47113056
Longitude:	-104.87453611
Photo Direction:	WNW
Category:	Emergency Response
Photo Description:	START performing field tests to determine hazard categories of the contents from the abandoned drum. Personnel is wearing level C personal protective equipment (PPE).
Photo Name:	Photos-20231219-113232.JPG



Project Name:
Castle Pines Abandoned Drum

Site Location:
Castle Pines, Colorado

Project No.:
103X903523F0059231208

Date/Time Taken:	12/16/2023 4:51:00 PM	
Photographer:	leyoub_Patrick	
Latitude:	39.47116944	
Longitude:	-104.87461944	
Photo Direction:	W	
Category:	Emergency Response	
Photo Description: Overview of the western side of the site after all site activities were completed.		
Photo Name: Photos-20231218-181831.JPG		

Date/Time Taken:	12/16/2023 4:51:00 PM	
Photographer:	leyoub_Patrick	
Latitude:	39.47117222	
Longitude:	-104.87463333	
Photo Direction:	N	
Category:	Emergency Response	
Photo Description: Overview of the location where the unknown drum was found after all site activities were completed. Absorbent material was cleaned up and collected for off-site disposal.		
Photo Name: Photos-20231218-182331.JPG		

Project Name:
Castle Pines Abandoned Drum

Site Location:
Castle Pines, Colorado

Project No.:
103X903523F0059231208

Date/Time Taken:	12/16/2023 4:52:00 PM	
Photographer:	leyoub_Patrick	
Latitude:	39.47116944	
Longitude:	-104.87455833	
Photo Direction:	E	
Category:	Emergency Response	
Photo Description: Overview of the east side of site after site activities were completed.		
Photo Name: Photos-20231218-182550.JPG		

Date/Time Taken:	12/16/2023 4:58:00 PM	
Photographer:	leyoub_Patrick	
Latitude:	39.4712391	
Longitude:	-104.8745726	
Photo Direction:	N	
Category:	Emergency Response	
Photo Description: The ERRS contractor loading the original damaged drum found on site and the new drum used to transport the contents of the damaged drum.		
Photo Name: Photos-20231218-181653.JPG		

Project Name:
Castle Pines Abandoned Drum

Site Location:
Castle Pines, Colorado

Project No.:
103X903523F0059231208

Date/Time Taken:	12/16/2023 5:00:00 PM
Photographer:	leyoub_Patrick
Latitude:	39.4712391
Longitude:	-104.8745726
Photo Direction:	N
Category:	Emergency Response
Photo Description:	Up-close view of the emptied drum found on site (right) and the new drum used to transport waste (left) secured on truck to be removed off site for disposal.
Photo Name:	Photos-20231218-181023.JPG





TETRA TECH

ENCLOSURE 3
LOGBOOK DOCUMENTATION

2 12/16/23 Castle Pines Abandoned Drum

Weather: High 59°F, Low 33°F, sunny, 1% chance of rain starting at 1600.

1230: START (P. Teyoub and M. McAleese) leave the warehouse.

1311: START onsite with EPA (B. Crott and C. Meyers) and ERs Contractor. START begins to calibrate equipment; Calibration logs found in Logbooks: Multi-Rae Pro 965866, Multi-Rae Pro 965868, TVA 2020 60690, Gemini CO1073, and Lindlum M2 B00125.

1330: ERs applies floor dry to stream of suspected waste.

1410: Safety meeting with all parties onsite and START Health and Safety (D. Lox); main concerns: Rescue, Understanding of Task, and heat stress.

1430: START conducts medical monitoring before dressing out; results: M. McAleese Blood Pressure: $\frac{124}{89}$, pulse = 102, body temperature = 36.8°C. P. Teyoub blood pressure = $\frac{140}{91}$, pulse = 108, body temperature = 32.5°C.

1500: START makes entry to investigate and sample drum.

1530: START change to level C for Hazcatting.

15:45: START begins to hazcat sample from drum. Hazcat results are as follows:
pH = 10 ; oxidizer = neg; sulfide = neg

Scale: 1 square = _____ MM

12/16/23 Castle Pines Abandoned Drum 3

15:45 (cont): Peroxide = neg; watermo = neg; cyanatesmo = neg; buelstine = orange w/ sparks; ignite (match) test = ignites; thermal test = flammable vapors.

Gemini FTIR = Diesel lot F, G, H, → E

Gemini Raman = Diesel 85% + Petroleum 3%

16:20: Hazcat testing complete, START begins to pack up field supplies.

16:30: ERRS transfers drum contents into new, shippable drum.

16:45: ERRS packs all drums into truck to transport offsite.

16:50: ERRS + EPA leave site. START stays behind to document site after field activities were completed.

17:00: START leaves site.

END LOG BOOK
MM 12/16/23

Scale: 1 square = _____

MM

Write in the Rain.



TETRA TECH

ENCLOSURE 4
TABLE

Table 1
Castle Pines Abandoned Drum Hazard Categorization Field Test Results

Sample Description					Chemical Screening		Strip Tests						Flame Tests			Comments
Sample ID	Matrix	Sample Color	Sample Opacity (TL, TP, OP)	No. of Phases	FTIR	Raman	Cyanide (+/-)	pH (0-14)	Watesmo (+/-)	Sulfide (+/-)	Oxidizer (+/-)	Peroxide (+/-)	Ignitability + = Ignites - = no Ignite	Thermal Test + = Vapors Ignite - = Vapors do not Ignite	Bielstein Flame color	Misc. Test Notes
CPAD-01-G-20231612	AQ	Pink	TL	1	Diesel	Diesel	-	10 SU	-	-	-	-	+	+	Orange	Produced black webbed smoke during match test indicating sample contains hydrocarbons

Notes:

AQ Liquids

FTIR Fourier transform infrared

OP Opaque

SU Standard units

TL Translucent

TP Transparent

> Greater Than

+ Positive Detection

- Non-detect