754.FF02.02

Hazard Ranking System Evaluation for the Callaway Drum Recycling Site, Auburndale, Polk County, Florida

EPA I.D. No. FLN000407303

March 2002

Prepared for:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Site Screening Superfund Subsection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Table of Contents

This page left blank intentionally.

List of Tables

This page left blank intentionally.

List of Illustrations

Figure **Page**

This page left blank intentionally.

List of Acronyms and Abbreviations

a.k.a	also known as
ASTM	American Society for Testing and Materials
BGS	below ground surface
BNA	base, neutral and acid extractable organic compound
CDR	Callaway Drum Recycling
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (of 1980)
CompQAP	Comprehensive Quality Assurance Plan
CR	County Road
DOT	United States Department of Transportation
DQO	data quality objective
E & E	Ecology and Environment, Inc.
e.g.	for example
EISOPQAM	Environmental Investigation Standard Operating Procedures and Quality Assurance Manual
EPA	United States Environmental Protection Agency
FDEP	Florida Department of Environmental Protection, formerly FDER
FDER	Florida Department of Environmental Regulation, now FDEP
FGS	Florida Geological Survey
FIRM	Flood Insurance Rate Map
FS	Florida Statute
ft^2/day	square feet per day
gpm	gallons per minute
HRS	hazard ranking system

List of Acronyms, cont.

ID	inside diameter
IDW	investigation-derived waste
ml	milliliter
msl	mean sea level
NGVD	National Geodetic Vertical Datum
NPL	National Priorities List
NTU	nephelometric turbidity units
NWI	National Wetland Inventory
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PG	Professional Geologist
ppb	parts per billion
PUBHx	Palustrine, unconsolidated bottom, permanently flooded, excavated
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
SARA	Superfund Amendments and Reauthorization Act
SESD	(EPA) Science and Ecosystem Support Division
SI	site inspection
SWFWMD	Southwest Florida Water Management District
TAL	target analyte list
TCL	target compound list
TVA	total vapor analyzer
USC	United States Code
USGS	United States Geological Survey
VOA	volatile organic analysis
VOC	volatile organic compound

1 Introduction

This draft Hazard Ranking System (HRS) evaluation for the Callaway Drum Recycling (CDR) site has been prepared by Ecology & Environment, Inc. (E & E) for the Florida Department of Environmental Protection (FDEP) under Contract Number HW-363. The draft HRS score, completed on HRS SI score sheets provided by FDEP, was calculated using field information during the October 2001 Preliminary Assessment/Site Inspection (PA/SI) field investigation, as well as available site file information. The draft HRS evaluation and score for the site are subject to change pending receipt of additional information and/or quality assurance review by the United States Environmental Protection Agency (EPA).

2 Site Background/History

The CDR site is a vacant property located on County Road (CR) 655 (a.k.a. Berkley Road) in Auburndale, Polk County, Florida, within Section 33, Township 27 South, Range 25 East [1, 2, 3]. Based on the Auburndale topographic map, the approximate latitudinal and longitudinal coordinates for the site are 28E5'11" N (28.086382) and 81E49'11"W (81.819805, respectively [1]. Figure 1 depicts the site location and a 1-mile radius around the site [1].

The CDR site is located in a rural residential area, approximately 450 feet north of the intersection of CR 655 and Lake Myrtle Drive [2, 4]. The site is rectangular in shape covering an area of 10.66 acres property having the approximate dimensions of 1,000 feet east-west by 500 feet north-south [2, 3]. According to records obtained from the Polk County Property Appraisers Office, Adams Packing Association, Inc. has owned the site since 1947 [3]. Available site file information suggests that CDR operated on the property from some time prior to 1971, until approximately 1979 [5, 6, 9, 10]. However, the exact dates that CDR operated on the site are unknown. The site is currently vacant with no permanent structures and the majority of the property is densely vegetated.

Several manmade features and areas of debris, located on the site, may be attributable to the former drum recycling operations (see Figure 2). A large excavated area composed of a series of ditches and berms running north-south is located in the northwest section of the site. A similar excavated area was observed in the southwest section of the site and remnants of drums and piles of crushed aluminum juice cans were observed in this area. Labeling on the aluminum juice cans indicated that the cans had contained or were intended to contain Adams grapefruit juice. The remains of many drums were observed across the site during the site reconnaissance and PA/SI field investigation.

Two large trenches that run east-west are located in the southeast section of the site. A less densely vegetated area is located centrally on the eastern half of the site. A former employee indicated that the main drum reconditioning operations were conducted in this area. Remains of many drums and possible reconditioning equipment were observed in the vicinity of the former

reconditioning area. In addition, a large pile of pallets and large open-top containers were observed in this same area. The containers, estimated to hold greater than 100 gallons, carried Adams Packing labels and appeared to be associated with juice processing. A former employee remembered that there was a well on the site; however, the employee could not remember the exact location. The well was not located during the site reconnaissance or field investigation.

The CDR site is located in an area of mixed land use, primarily rural residential and agricultural [4]. A review of the available historical aerial photographs indicates that the areas in all directions around the site were agricultural prior to 1979 [9, 10]. At present, a small subdivision is located north of the site. Agricultural pastureland is located beyond the subdivision, and CR 655 (a.k.a. Berkley Road) is directly east of the site, beyond which are residential subdivisions. Two properties comprising approximately 10 acres in total and zoned as a commercial enclave are located south of the site. A cellular tower and communications tower construction company currently operates on one of these properties (the Marquis property – see Figure 2). For approximately ten years from the mid-1970s, the former owner of this property, Mr. Pearson, operated a borrow pit for sand and clay. The site is bordered on the west by a railroad embankment, beyond which is pastureland.

In October 2001, E & E and FDEP installed six monitoring wells in the surficial aquifer at and in the vicinity of the CDR site. Groundwater samples collected from on-site monitoring wells exhibited concentrations of ethylbenzene, tetrachloroethene (PCE), and toluene exceeding the federal and state primary drinking water standards (PDWS). The highest concentrations of ethylbenzene, PCE, and toluene were 1,300 μg/l, 7,300 μg/l, and 3,300 μg/l, respectively.

The upper Floridan aquifer is the principal source of water for consumptive use in Polk County [24, 33, 34].

In northern Polk County, the upper Floridan aquifer is approximately 800 feet thick [33, 34]. Groundwater within the upper Floridan aquifer occurs under confined conditions in the site vicinity [22, 23]. In the site vicinity, the upper Floridan aquifer is recharged by leakage from the overlying intermediate aquifer system [29, 34]. The potentiometric surface of the upper Floridan aquifer is estimated to be at 90 to 100-feet NVGD in the site vicinity, approximately 45 to 55 feet below ground surface (BGS) [30]. The intermediate aquifer system, in turn, is recharged by downward leakage from the surficial aquifer system [29, 34].

The City of Auburndale operates six wells within a 4-mile radius of the site [15, 16]. The City of Auburndale well system collectively serves a population of approximately 31,822 people [16]. The two Winona Park wells operated by the City of Auburndale are located approximately 1.5 miles

west-northwest of the site [15]. The three Atlantic Avenue wells, and one Tampa Street well, are located approximately 2.1 and 2.6-miles southwest of the site, respectively [15].

Forty-nine community and non-community well systems exist within 4 miles of the site, collectively serving 6,983 people. The largest system, Mariana Acres Water System, consists of two wells that serve 1,785 people [16]. These wells are located approximately 3.75 miles west of the site [15]. The nearest community system, Happy Day Trailer Park, serves 120 people and is located approximately 1.9 miles southwest of the site [15,16].

At this time, the number of private wells for potable use employed within 4 miles of the site is unknown. Observations made during the site reconnaissance and field investigation suggest that the majority of properties in the vicinity of the site are served by public and municipal water systems. However, three private supply wells are known to exist within 0.25 miles of the site. One potable well is located on the property (Marquis) immediately south of the site; the second is located on the Cameron property east of the site beyond CR 655; and the third is located at Sparky's Food Store # 312 located at the southwest corner of the intersection of Lake Myrtle Drive and CR 655 (see Figure 2). A population database search indicates that 24,909 people reside within a 4-mile radius of the site [17].

Table 1
DISTRIBUTION OF POTABLE SUPPLY WELLS WITHIN 4 MILES OF CALLAWAY DRUM RECYCLING SITE AUBURNDALE, POLK COUNTY, FLORIDA

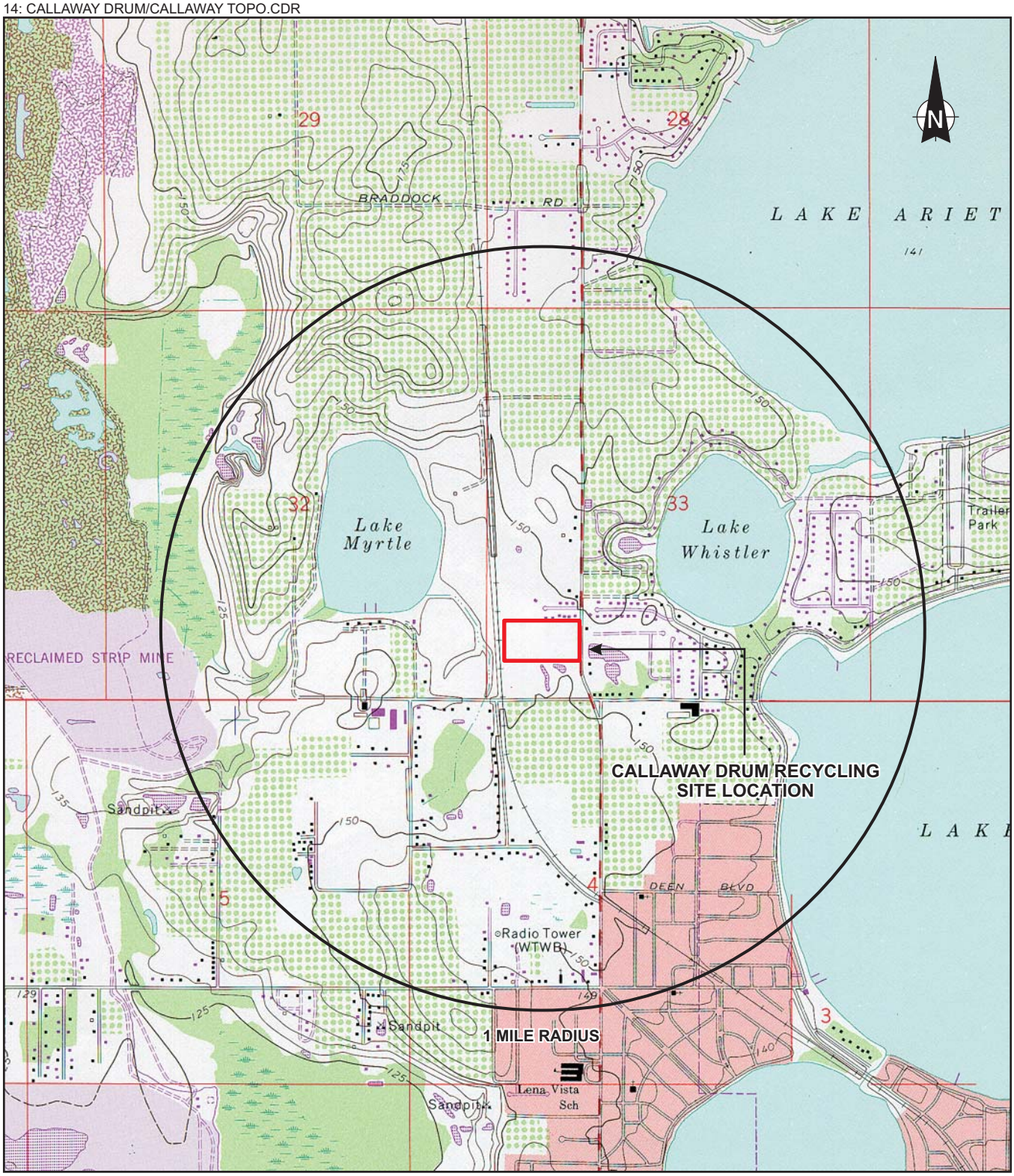
Supply Wells	0 to 0.25 mile (number of wells/ population served)	0.25 to 0.5 mile (number of wells/population served)	0.5 to 1 mile (number of wells/population served)	1 to 2 miles (number of wells/population served)	2 to 3 miles (number of wells/population served)	3 to 4 miles (number of wells/population served)
City of Auburndale Public Supply Wells[a]	- / -	- / -	-/ -	2 / 10,608[a]	4 / 21,216[a]	- / -
Community Wells	- / -	- / -	- / -	1 / 120	1 / 210	12 / 4,190
Private Wells	3 / 105[b]	- / -	1 / 185	1 / 30	13 / 1,066	18 / 1,082
Total Number of Wells/Population Served (approximate)	3 / 105[b]	- / -	1 / 185	4 / 10,758	18 / 24,046	25 / 5,272

Source: FDEP 2001 [16, 17].

Note:
[a] The City of Auburndale Public Water Supply System is a blended system serving an approximate population of 31,822 [16, 17].
[b] The average population per household for Polk County is 2.53 [43].

Key:
- / - = No known potable supply well within described distance from site [32].
NE = Not evaluated.

14: CALLAWAY DRUM/CALLAWAY TOPO.CDR



SOURCE: U.S.G.S. 7.5 Minute Series (Topographic) Quadrangle: Auburndale, Florida 1975, photorevised 1988.

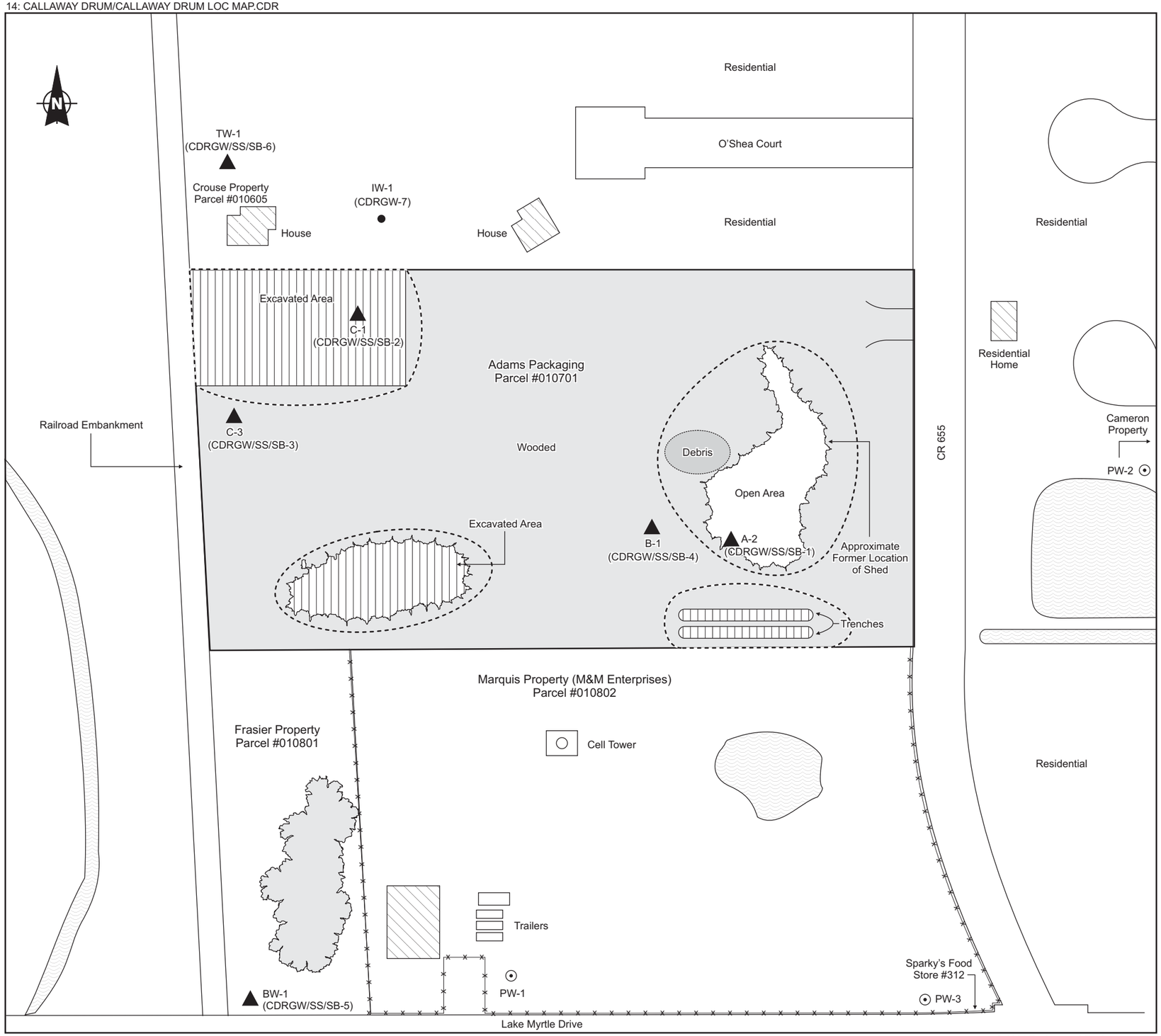
SCALE

0 .5 1 MILE

0 1000 2000 3000 4000 5000 FEET

Figure 1 LOCATION MAP -- CALLAWAY DRUM RECYCLING, AUBURNDALE, POLK COUNTY, FLORIDA

14: CALLAWAY DRUM/CALLAWAY DRUM LOC MAP.CDR



KEY:

- Building
- Fence
- Shallow Monitoring Well Location
- Private Supply Well
- Irrigation Well
- Excavated Areas
- Investigation Focus Area
- Pond
- Trees

APPROXIMATE SCALE

0 125 250 Feet

Figure 2 **SITE MAP -- CALLAWAY DRUM RECYCLING, AUBURNDALE, POLK COUNTY, FLORIDA**

SOURCE: Ecology and Environment, Inc. 2001

3 Site Environmental Setting

3.1 Hazardous Ranking System Evaluation/Score

Very little is known about the CDR operations on the site. Some information has been obtained from telephone interviews with two former employees, as well as a site walkover with one of these former employees. Historical aerial analysis and employee interviews suggest that drum recycling operations ceased at the site in the late 1970s. However, the start-date of the drum recycling operations is unknown. Analysis of the aerial photographs suggests that excavation operations apparently began at the site about 1958. Drum recycling operations are not apparent on aerial photographs until 1971.

Interviews with former employees indicated that drums initially were received and unloaded at the rear (west) of the property and any remaining contents were poured on the ground [6, 8]. The drums were reconditioned in the eastern half of the site. One former employee described the drum reconditioning process. After the drums were emptied, they were brought to the reconditioning areas to be rinsed and cleaned. The drums were placed on racks to dry; then they were straightened and repainted to be sold.

Although the descriptions of the drum recycling operations given by the former employees were not detailed, it appears that the operation process may have been similar to those described at a CDR facility subsequently operated in Lake Alfred, Florida [11, 12]. The Lake Alfred facility operated from operated from mid-1977 through early 1991 and was placed on EPA's National Priorities List (NPL) in May 2000 [35]. The Auburndale facility was initially brought to the attention of EPA and FDEP during the Lake Alfred facility NPL listing process. Although the former employees stated that some drums were labeled as caustic and corrosive, the source and the contents of the drums received at the site are unknown at this time [6, 8].

During the site reconnaissance and PA/SI field investigation, drum debris and the remnants of materials potentially associated with fruit packing and juice operations were observed on the ground surface throughout the site.

Surface and subsurface soil samples collected during the October 2001 field investigation indicated that elevated concentrations of metals, pesticides, polychlorinated biphenyls (PCBs), semivolatile organic compounds (SVOCs) are present in site soils.

Considering each of the potential sources as a single source yields a hazardous waste quantity (HWQ) value of 10 (see Page 6 of the score sheets).

- Contaminated soil: Assuming the entire 10.66-acre site is contaminated (10.66 acres < 78 acres. HWQ = 10.

  However, based on the distribution the contaminants exhibited in soil samples collected during the October field investigation the area of soil contamination is incomplete. Default HWQ = 10.

- Drum storage: Number of drums unknown. Default HWQ = 10

As the hazardous constituent quantity are not complete (number of drums or area of soil contamination) the default HWQ of 10 has been used to develop the score.

3.2 Groundwater Migration Pathway

The surficial aquifer and Floridan aquifer systems were evaluated for the HRS score. Groundwater samples collected from the Surficial aquifer during the SI field investigation exhibited concentrations of metals, VOCs, and SVOCs significantly exceeding background levels.

Groundwater sample CDRGW-1 collected from on-site monitoring well A-2 exhibited a concentration of PCE of 7,300 µg/l, exceeding the federal and state primary drinking water standards of 5 µg/l and 3 µg/l, respectively. PCE was not detected in the background sample. PCE has a toxicity/mobility value of 100. Groundwater samples CDRGW-3 and CDRGW-3 DUP collected from monitoring well C-3 exhibited concentrations of ethylbenzne (1,300 µg/l and 1,200 µg/l) and toluene (3,300 µg/l and 2,500 µg/l) exceeding the federal and state PDWS. Ethylbenzne and toluene each have toxicity/mobility value of 10.

Based on the contaminant concentrations exhibited by the site groundwater samples, an observed release to the surficial aquifer system (likelihood of release = 550) was used in the scoring process. However, the surficial aquifer is not a source of water for consumptive use in the area,

therefore a sum of targets score (T) of 0 was calculated. A waste characteristic (WC) value of 6 was calculated using a HWQ of 10 (see page 17 of score sheets). Using these values a groundwater pathway score of 0.04 was calculated for the observed release.

Observed release to the Surficial aquifer:

- Groundwater Migration Pathway Score (Sgw): LR = 550; T = 0; WC = 6.
  Sgw = 0.04

Based on the contaminant concentrations exhibited by the site groundwater samples, a potential release to the Floridan aquifer system (potential to release = 500) was used in the scoring process. This is based on an estimated depth to the Floridan aquifer of approximately 45 to 55-feet. A sum of targets score (T) of 1,937.4 was calculated for the site based on the potential contamination targets within a 4-mile radius of the site (see page 15 of the score sheets).. A waste characteristic (WC) value of 6 was calculated using a HWQ of 10 (see page 17 of score sheets). Using these values a groundwater pathway score of 70.45 was calculated for the observed release.

Potential release to the Floridan aquifer:

- Groundwater Migration Pathway Score (Sgw): LR = 550; T = 1,937.4, WC = 6.
  Sgw = 70.45

Using the single source scenario (HWQ = 10), the groundwater migration pathway score based on potential release to the Floridan aquifer (70.45) is sufficient to score the site using a single pathway (>57). Therefore, based on this evaluation, the groundwater pathway is a major concern at the CDR site.

3.3 Surface Water Migration Pathway

The surface water migration pathway score (Ssw) consists of three separate threat scores: 1) the Drinking Water Threat score, 2) the Human Food Chain Threat score, and 3) the Environmental Threat score.

Observations of soil lithology suggest that the soil type would allow the rainfall to infiltrate on-site. The site is generally level, however, the site topography has been altered through historical earth moving activities. In addition, the majority of the site is covered with dense vegetation preventing contaminated soil from running off-site. Based on the general flat topography and dense

vegetation, as well as the railroad embankment and the road to the west and east of the site, respectively, stormwater runoff is likely retained on-site. However, a closed basin (pond) exists on the Marquis property to the south, and runoff during high rainfall events may flow toward this area.

Observations during the site reconnaissance, the PA/SI field investigation and site file review indicate that the surface water pathway does not appear to be of concern CDR site. Therefore, after preliminary evaluation of this pathway, a score was not developed.

3.4 Soil Exposure Pathway

Soil samples collected at the CDR site during the PA/SI field invetsigation exhibited concentrations of metals, pesticides, PCBs, and SVOCs significantly above background levels

The soil exposure route consists of two separate threat scores: 1) the Resident Population Threat score and 2) the Nearby Population Threat score. A likelihood of exposure (LE) value of 550 (i.e., observed contamination on-site) was used to calculate the Resident Population Threat score (see pages 34 and 34 of the score sheets). A target (T) score of 2.53 was calculated, based on one residence existing within 200-feet of the on-site Level II contamination (see page 34).

Based on a toxicity value for PCBs of 10,000, a HWQ value of 10, a waste characteristics (WC) score of 10 was calculated for the site (see page 38). Using the above-mentioned assumptions, the following score was developed.

- Residential Population Threat Score: LE = 550; T = 2.53; WC = 10. Score = 0.167

For the Nearby Population Threat, a likelihood of exposure (LE) value of 50 was calculated from the following: an Attractiveness/Accessibility value of 10 based on the site's accessibility to the public (no locked security fence surrounding property), but with no evidence of public recreation use; and an assumed Area of Contamination value of 80 based on a site soil contamination area of approximately 464,350 square feet (10.66 acres: see page 35, Tables 17 and 18). The number of individuals residing within a 1-mile radius is 4,366 [17]. A T value of 3.1 and a WC value of 10 HWQ =10 was calculated for the site (see pages 35 and 38, Table 20 of the score sheets). Based on the above-mentioned assumptions, the following score was developed.

- Nearby Population Threat Score: LE = 50; T = 3.1; WC = 10. Score = 0.019

Summing the Resident Population Threat and Nearby Population Threat scores resulted in the following Soil Exposure Pathway scores (see page 38 of score sheets):

- Soil Exposure Pathway Score (Sse): Resident Population Threat (0.169) + Nearby Population Threat (0.019). Sse = 0.188

The overall HRS score for the site was not significantly influenced by the addition of the Soil Exposure Pathway Score. The Soil Exposure Pathway does not appear to be a major concern at the CDR site.

3.5 Air Migration Pathway

The air migration pathway score (Sa) was not evaluated for the CDR site. Surface soil samples collected during the SI field activities exhibited concentrations of metals, pesticides, PCBs, and SVOCs significantly exceeding background concentrations. However, all contaminant concentrations exhibited by surface soil samples were below the soil cleanup target level (SCTL) for residential direct exposure. Further, the property is well vegetated, limiting the potential for dust or wind-borne contamination. Therefore, the air migration pathway does not appear to be of concern.

3. 6 Score Summary

Calculations and score summary details are presented on page 45 of the score sheets.

Sgw	=	0.04 (77.5)
Ssw	=	Not evaluated
Sse	=	0.188
Sa	=	Not evaluated
Score	=	0.096 (35.23)

This page left blank intentionally.

4 Summary

The results of this HRS evaluation indicate that drum reconditioning activities at the CDR site have adversely affected the shallow groundwater at the site. Based on an observed release to the surficial aquifer, a groundwater pathway score of 0.04 was calculated. This pathway score is not sufficient to score the site. This is primarily based on the low number of potential targets as the surficial aquifer is not a primary source for consumptive use in the area. However, based on the potential for release to the Floridan aquifer, a groundwater pathway score of 70.45 was calculated. This pathway score is sufficient to score the site on the groundwater pathway alone and is largely driven on the number of potential drinking water targets within 4-miles of the site.

The surface water pathway was not evaluated for this draft HRS score. Observations of the site topography, local geology, and site vegetation suggest that surface water run-off would be minimal off site.

The soil exposure pathway score calculated for the site does not significantly influence the site score. Several factors contributed to the low score including: the number of targets within a 1-mile radius of the site; a relatively low attractiveness value to the site; and the concentration of the contaminants.

The air pathway was not evaluated for this draft HRS score. Based on the low concentration of surface soil contamination, and the dense vegetation on-site, the potential for impact to the air migration pathway would be minimal.

Based on this draft HRS evaluation/score, further action under the Comprehensive, Environmental response, Compensation, and Liability Act is warranted at the site.

5 References

1. United States Geological Survey (USGS), 7.5 minute topographic maps, 1:24,000 scale. Auburndale, Florida, 1975 (photo revised 1988).

2. Polk County Property Appraiser, June 18, 1999. Platt Map for Southwest 1/4 of Section 33, Township 27 South, Range 25 East.

3. Polk County Property Appraiser, August 2, 2001. Parcel information for 25-7-33-301500-010701.

4. Polk County Planning Department, November 18, 1992. Future Land Use map, Quadrangle 314, Auburndale, Florida.

5. Long, Joni Lynn, March 26, 2001. Letter to the Congressman Adam Putnam.

6. McCarthy, Jr., Arthur J., Professional Geologist (PG), FDEP Site Screening Superfund Subsection, April 7, 2001. Telephone log of interview with Joni Lynn Long.

7. Diaz, Jesus, FDEP Site Screening Superfund Subsection, April 2, 2001. Windshield Survey Form of the Callaway Drum Recycling Site.

8. McCarthy Jr., Arthur J., PG, FDEP Site Screening Superfund Subsection, August 15, 2001. Telephone log of interview with Ronnie Holley.

9. EPA Environmental Sciences Division, Las Vegas, November 2000. Aerial Photographic Analysis of the Callaway and Son Drum Service Site, Berkley Road Location, Auburndale, Florida.

10. Polk County, 1973 and 2000 Aerial Photographs for Section 33, Township 27 South, Range 25 East.

11. Florida Department of Environmental Regulation (FDER: now FDEP), Groundwater Section, August 29, 1984. Groundwater Investigation Report No. 84-11, Callaway and Son Drum Reconditioning, Lake Alfred, Polk County, Florida.

12. Jacobs Engineering Group, Inc., September 1992, revised December 1992. Phase II Site Inspection Report for the Callaway and Son Drum Service, Lake Alfred, Polk County, Florida. USEPA Site Identification No. FLD 094590916.

13. Federal Emergency Management Agency, January 19, 1983. Flood Insurance Rate Map for Polk County Florida. Community Panel Number 120261 0350 B.

14. United States Department of the Interior, Fish and Wildlife Service, 1988. National Wetland Inventory Map for the Auburndale Quadrangle.

15. FDEP, April 18, 2001. Public Water Supply Map for 4-Mile Radius of CDR Site.

16. FDEP, April 17, 2001. Public Water Supply Search for 4-mile Radius from the Callaway Drum Recycling Site.

17. FDEP, April 17, 2001. Population Tiger Database Lookup. Population within 4-miles radius from the Callaway Drum Recycling Site.

18. Polk County Property Appraiser, July 17, 2001. Property information card for Parcel ID 25-7-33-301500-010701.

19. Dick, Barbara, EPA Region IV, March 27, 2001. E-mail to Joseph McGarrity, FDEP, referring the Callaway Drum recycling Site to FDEP to conduct a combined PA/SI.

20. Tillman, Bobby, Superintendent, City of Auburndale,. June 23, 1989. City of Auburndale Well Information.

21. White, W.A., 1970. The Geomorphology of the Florida Peninsula. Florida Department of natural Resources. Geological Bulletin No. 51.

22. Stewart, Jr., H.G., 1966. Ground Water Resources of Polk County. Florida Geological Survey (FGS) Report of Investigations No. 44.

23. Campbell, K., 1992. Geologic Map of Polk County. FGS Open File Map Series No. 46.

24. Campbell, K., 1986. Geology of Polk County, Florida. FGS Open File Report 13.

25. Johnson, R. A., 1986. Shallow Stratigraphic Core Tests on File at the Florida Geological Survey. FGS Information Circular No. 103.

26. Pride R. W., F.W. Meyer, and R.N. Cherry, 1966. Hydrogeology of Green Swamp Area in Central Florida. FGS report of Investigations No. 42.

27. Scott, T.M., 1988. The Lithostratigraphy of the Hawthorn Group (Miocene) of Florida. FGS Bulletin No. 59

28. Southeastern Geological Society, 1986. Hydrogeological Units of Florida. FGS Special Publication No. 28

29. Duer, A.D., J.D. Hunn, B.R. Lewelling, and J.T. Trommer, 1988. Geohydrology and 1985 Water Withdrawals of the Aquifer System in Southwest Florida, with Emphasis on the Intermediate Aquifer System. USGS Water Resources Investigations Report 87-4259.

30. Scott, T.M., J.M. Lloyd, and G. Maddox, 1991. Florida's Groundwater Quality Monitoring Program. Hydrogeological Framework. FGS Special Publication No. 32

31. Wolansky, R.M., R.K. Spechler, and A. Buono, 1979. Generalized Thickness of the Surficial Deposits above the Confining Bed Overlying the Floridan Aquifer, Southwest Florida Water Management District. USGS Water Resources Investigations. Open-File Report 79-1071.

32. Southwest Florida Water Management District (SWFWMD), March 1988. Ground Water Resource Availability Inventory: Polk County, Florida.

33. Barr, G.L., 1992. Ground Water Contamination Potential and Quality in Polk County, Florida. USGS Water Resources Investigations Report 92-4086.

34. EPA, Region 4, May 1996 (revised 1997). Environmental Investigations Standard Operating Procedures and Quality Assurance Manual.

35. EPA Superfund website, http://www.epa.gov/superfund/. Callaway & Son Drum Service, Lake Alfred, Florida. NPL Site Narrative at Listing (May 11, 2000). CERCLIS Hazardous Waste Sites, Site Information and Actions (July 12, 2001).

36. EPA. May 1999. Improving Site Assessment: Combined PA/SI Assessments (Draft). Office of Solid Waste and Emergency Response. EPA –540-F-98-038.

37. Ecology and Environment, Inc. (E & E0. August 2001. Preliminary Assessment/Site Inspection Work Plan for the Callaway Drum Recycling Site. Auburndale, Polk County, Florida.

38. E & E. August through October 2001. Field Log Books for PA/SI Activities.

39. Southwest Florida Water Management District (SWFWMD), March 1988. Ground-Water Resource Availability Inventory: Polk County, Florida.

40. Visher, F., and Hughes, G. 1975. The Difference between Rainfall and Potential Evaporation. Map Series 32, Second Edition, United States geological Survey.

41. Hershfield, D. M., 1963, Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years. Weather Bureau Technical Paper, No. 40.

42. FDEP, April 17, 2001. Florida Natural Areas Inventory (FNAI) Data search for Callaway Drum Recycling Site, Auburndale, Polk County, Florida.

43. University of Florida. Bureau of economic and Business Research. 1998. Florida Statistical Abstract, 32nd Edition.