

**FIFTH FIVE-YEAR REVIEW REPORT FOR
COMPASS INDUSTRIES SUPERFUND SITE
TULSA COUNTY, OKLAHOMA**



March 2016

Prepared by

**U.S. Environmental Protection Agency
Region 6
Dallas, Texas**

and

**Oklahoma Department of Environmental Quality
Oklahoma City, Oklahoma**



Fifth Five Year Review Report
Compass Industries Superfund Site
EPA ID# OKD980748446
Tulsa County, Oklahoma

This memorandum documents the United States Environmental Protection Agency's performance, determinations, and approval of the Compass Industries Superfund Site fifth five-year review under Section 121 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S. Code § 9261 (c), as provided in the attached Fifth Five-Year Review Report.

Summary of the Fifth Five-Year Review Findings

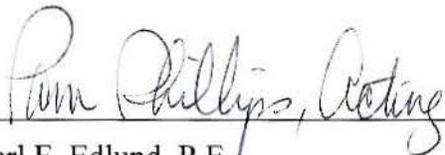
The site remedy consists of capping, on-site ground water treatment, institutional controls, a 30 year post closure monitoring period, and operation and maintenance for the site. The post closure/operation and maintenance period began in 1991 and will be completed at the time of the next five year review, scheduled to be conducted in 2021. Prior to completing the next five year review, EPA and the State of Oklahoma will review the need to conduct additional five year reviews as well as continuing operation and maintenance activities at the Site.

Actions Needed

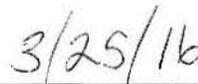
None

Determination

I have determined that the remedy for the Compass Industries Superfund Site is protective of human health and the environment. No issues were identified during this five year review process that affect the protectiveness of the remedy.



Carl E. Edlund, P.E.
Director, Superfund Division
U.S. Environmental Protection Agency, Region 6

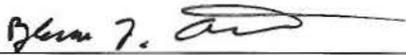


Date

CONCURRENCES

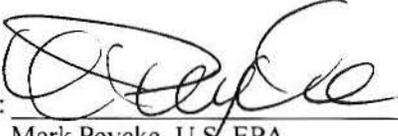
FIFTH FIVE-YEAR REVIEW
Compass Industries Superfund Site
EPA ID# OKD980748446

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**COMPASS INDUSTRIES SUPERFUND SITE
FIFTH FIVE YEAR REVIEW REPORT
ISSUES/RECOMMENDATIONS AND FOLLOW-UP ACTIONS**

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
						Current	Future
OU Site- wide	None	None	NA	NA	NA	No	No

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LIST OF ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DEQ	Oklahoma Department of Environmental Quality
EPA	United States Environmental Protection Agency
FID	Flame Ionization Detector
FS	Feasibility Study
FYR	Five-Year Review
ICs	Institutional Controls
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OSDH	Oklahoma State Department of Health
PID	Photo Ionization Detector
PPM	Parts Per Million
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objectives
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
FYR	Five Year Review
VOCs	Volatile Organic Compounds

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this five-year review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the Fifth Five-Year Review (FYR) for the Compass Industries Superfund Site (Site) located in Sand Springs, Tulsa County, Oklahoma. The triggering action for this statutory FYR was the signing of the previous FYR on April 5, 2011. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The remedy called for a 30 year post closure monitoring period and operation and maintenance for the site. The post closure/operation and maintenance period began in 1991 and will be completed at the time of the next five year review, scheduled to be conducted in 2021. Prior to completing the next five year review, EPA and the State of Oklahoma will review the need to conduct additional five year reviews, as well as continuing operation and maintenance activities at the Site.

The Site consists of one Operable Unit which is addressed in this FYR.

The Compass Industries Landfill Superfund Site Five-Year Review was led by Amber Edwards of the Oklahoma Department of Environmental Quality. Brian Mueller, U.S. EPA, Remedial Project Manager for the Site, assisted in the review. The review began on June 4, 2015.

Site Background

The Compass Industries Superfund site is an abandoned landfill, located in a former limestone quarry, west of Chandler Park in Tulsa County, Oklahoma (Lots 3 and 4, Section 18, Township 19 North, Range 12 East and Lot 6 NE1/4 SE1/4, Section 13, Township 19 North , Range 11 East). The site is situated on a bluff approximately one-quarter mile south and 200 feet above the Arkansas River, directly west of the Chandler Park softball facility (EPA, 1992). The Compass Industries site consists of approximately 125 acres (EPA 2000). Figures of the site are included in Appendix B.

The site was originally operated as a quarry. Limestone from the site was being utilized for cement and railroad ballast making as early as 1904. Quarry operations at the site continued into the early 1960's. Aerial photography from 1964 shows that by that time, quarrying operations had ceased, and waste dumping activities had begun (EPA, 2001b). Between 1972 and 1976, the site operated as a municipal solid waste landfill facility permitted by the Oklahoma State Department of Health (OSDH); however, photographic evidence shows waste disposal and landfill activities continued into the 1980s (EPA, 2001b). Disposal of industrial waste was performed at the facility, even though it was not allowed as part of the permit conditions and regulations. Site data indicates that wastes were disposed of in an irregular manner, making it difficult to ascertain where the wastes of concern were located (EPA, 1987).

Records show that the site accepted three categories of wastes: solids, liquids, and sludges, which included acids, caustics, potentially toxic solvents, and potentially carcinogenic materials (EPA, 2001b). The absolute volumes of the pollutants are unknown, but are estimated to be approximately 620,000 cubic yards (EPA, 1987b).

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Compass Industries Superfund Site		
EPA ID: OKD980620983		
Region: 6	State: OK	City/County: Sand Springs, Tulsa County
SITE STATUS		
NPL Status: Deleted		
Multiple OUs? No	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA <i>[If "Other Federal Agency", enter Agency name]:</i> Click here to enter text.		
Author name (Federal or State Project Manager): Amber Edwards		
Author affiliation: Oklahoma Department of Environmental Quality		
Review period: 6/4/2015 - 4/5/2016		
Date of site inspection: 7/10/2015		
Type of review: Statutory		
Review number: 5		
Triggering action date: 4/5/2011		
Due date (five years after triggering action date): 4/5/2016		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The purpose of the response actions conducted at the Compass Industries site was to protect public health and welfare and the environment from releases or threatened releases of hazardous substances

from the site. The primary threat that the Compass Industries site posed to public health and safety was the potential for recurring fires with toxic air emissions, which had the possibility of reaching nearby residences. In addition, there was a potential for surface discharges along the bluff below the landfill site. According to the Endangerment Assessment study, the area is also a bald eagle habitat.

The specific remedial objectives of the remedial action were to prevent direct contact between the contaminated site materials, including soil, leachate, surface waters, and air emissions, and the human and animal population; prevent the infiltration of precipitation into the waste; and divert surface run-on and promote natural drainage of precipitation from the landfill.

Response Actions

Several fires were reported at the landfill during the 1970's. Often these fires were the result of the spontaneous combustion of the waste materials, burned underground for extended periods of time, and expelled smoke from the ground, which was multi-colored and produced odors (EPA, 2001b). The most recent fire burned underground for several years, occasionally breaking through the top soil cover, and burning out in late 1984. Citizens and the media complained of odors early in 1983, which prompted air monitoring in the vicinity of the landfill by the EPA and OSDH. Air monitoring results revealed the presence of some organics, but at levels that were considered non-hazardous. The EPA proposed the Compass Industries site to the NPL in September 1983 (EPA, 1987). The NPL is the list, compiled by EPA, of uncontrolled hazardous substance releases in the United States that are priorities for long-term remedial evaluation and response. During 1983 and 1984, approximately 28 borings were installed at the site to extinguish underground fires (EPA, 2001b). The site was listed on the NPL in September 1984.

In July 1984, the EPA and OSDH entered into a Cooperative Agreement to conduct a Remedial Investigation (RI) and Feasibility Study (FS) at the site (EPA, 2000). During the RI, samples were collected from soil, water, and air. The routes of offsite migration examined included surface runoff, ground water, transported sediments, and air. Analytical results identified 12 inorganic and 33 organic priority pollutants. The most common priority pollutants were base-neutral compounds, which had the greatest concentrations in samples of waste collected from surface and test trench soils. Findings from the RI included the following:

- Migration of contaminants in the ground water was being mitigated by attenuating mechanisms.
- Offsite migration of contaminants was limited to surface runoff and seeps.
- The shallow aquifer was contaminated, and the deeper aquifer was also contaminated, but to a lesser extent.
- Soil samples collected in the drainage ways were contaminated with inorganic priority pollutants, and wastes sampled on the ground surface showed significant concentrations of both inorganic and organic priority pollutants.
- The large spatial variation in compounds detected and their concentrations suggested that the disposal and types of wastes disposed may have varied widely across the site.
- Some, but not all, of the random soil samples taken from the site showed significantly higher concentrations of priority pollutants than the background soil samples (EPA, 1992).

In July 1987, the FS for the site was completed (EPA, 1992). EPA signed a Record of Decision (ROD) for the site on September 29, 1987 (EPA, 1987). The remedy selected and implemented under the ROD

was Capping and On-site Ground Water Treatment.

In August 1987, an Endangerment Assessment study was completed for the site. The study picked 15 chemicals as indicator chemicals from among those found at the site. The indicator chemicals were selected using the magnitude of their indicator scores and an evaluation of their environmental fate and transport characteristics. Findings from the Endangerment Assessment included the following:

- Ingestion of ground water was not considered a potential exposure pathway since nearby residents use city water.
- Ingestion or dermal absorption of surface water was determined not to pose a health hazard.
- Site soils represented the only contaminated environmental medium for which the exposure pathways were complete.

Status of Implementation

The ROD was signed on September 29, 1987. The principal concerns addressed at the site were from surface soils contaminated with inorganic and organic priority pollutants. The remedy described in the ROD included the following elements:

- Resource Conservation and Recovery Act (RCRA) cap involving site grading, cap placement, diversion of surface water, and air emissions monitoring.
- Ground water will be treated at a later date if found to be necessary.
- Installation of security fences and signs to restrict access to the site.
- Monitoring of the site for 30 years to ensure no significant offsite migration.
- Additional remedial action if significant migration of contaminants occurs (EPA, 1987).

On August 15, 2006, the EPA, in consultation with DEQ, issued an Explanation of Significant Differences (ESD) for the Site.

The purpose of the ESD was to document post-Record of Decision changes, based on Agency guidance regarding the evaluation and implementation of Institutional Controls. The ESD revised the selected remedy to include an Institutional Control (IC) as a component of the overall remedy, because hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. An IC is needed to ensure the long-term protectiveness of the remedy, and will restrict the uses of the land at the Site and minimize potential exposure to contaminants. DEQ filed institutional controls for the site on September 29, 2006. A copy of the ICs can be found in Appendix E. Table 1 contains a summary of the institutional controls that were filed.

IC Summary Table

Table 1: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater and soils	Yes	Yes	Legal description included in Notice of Remediation (Included in Appendix B)	Restrict installation of ground water wells and ground water use. Restrict digging or activities that would disrupt the cap. Provide easement for DEQ access.	August 15, 2006 ESD added IC's to the ROD. A Notice of Remediation (Deed Notice) filed by DEQ on September 29, 2006.

System Operation and Maintenance

Operation and Maintenance (O&M) activities prescribed by the Record of Decision (ROD) included a ground water and air monitoring and analysis program, inspection of the surface vegetation, and the periodic repair of the perimeter fence and signage. Cap maintenance entailed inspecting the cap and maintaining and replacing the passive gas filters in the gas collection and venting system. The ROD also required the site be monitored for a period of at least 30 years after the completion of the RA (EPA, 1987b).

The City of Sand Springs is currently responsible for the O&M activities at the site. The O&M Plan was updated in July 2015. Prior to completion of the next scheduled five year review, EPA and ODEQ will review the O&M plan to determine what activities need to be continued. The O&M requirements are outlined in Table 2 below.

Table 2: Current O&M Requirements

Activity	Schedule
Seep Sampling – If water is present, samples will be taken and analyzed to ensure that no offsite ground water migration from the perched aquifer is occurring.	Every five years, if water is present. Data and description to be included in the five-year review and Annual O& M Report.
Site Inspections - The integrity of the fence, gas vents, and cap will be inspected for signs of vandalism, erosion, degradation, and repair.	Semiannually. Description to be included in the Annual O&M Report and the five-year reviews.
Settlement Survey - Settlement of the landfill over time will be monitored.	Every five years. Data and description to be included in the five-year review and Annual O&M Report.
Site Maintenance -Vegetation and slope at the site must be maintained in such a condition to prevent erosion of the soil at the Affected Property to maintain cap integrity and stability.	As necessary, based on semiannual Site Inspections and Five-year Reviews. Description to be included in the Annual O&M Report and the five-year reviews.

Vent Sampling - The gases being released from the landfill will be monitored.	Semiannually. Data and description to be included in the Annual O&M Report and the five-year reviews.
Institutional Controls - The deed files will be checked to ensure that the notices remain in place.	Semiannually. Status to be reported in the Annual O&M Report and the five-year reviews.
Annual O&M Report - A report of all site activity and sampling results will be submitted to the regulatory agencies.	Annually.

The O&M activities completed since the last Five Year review are summarized in the 2011- 2015 annual reports (City of Sand Springs 2012-2015). The O&M reports show the vegetation is well established, and the drainage system is functioning as intended. The settlement survey was completed on July 8, 2015 (Stelle 2015a & Stelle 2015b). The semi-annual site inspection and vent sampling and seep sampling was conducted on July 23, 2015 (Stelle 2015c). The site is being maintained in accordance with the O&M Plan. The remedy is functioning as intended. The annual Operation and Maintenance Cost from 2011 to 2014 are summarized in Table 3 below.

Table 3: Compass Landfill Site Operation and Maintenance Annual Cost for Years 2011-2014.

Year	Annual O&M Cost
2011	\$4,165.00
2012	\$4,190.00
2013	\$4,500.00
2014	\$6,166.00

III. PROGRESS SINCE THE LAST REVIEW

Table 4: Protectiveness Determinations/Statements from the 2011 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The remedy implemented at the Compass Industries Site is protective of human health and the environment.
Sitewide	Protective	The remedy implemented at the Compass Industries Site is protective of human health and the environment.

Table 5: Status of Recommendations from the 2011 FYR

OU #	Issue	Recommendations / Follow-up Actions	Party Responsible	Oversight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
OU# 1	The site is currently operating under the August 1991 Post Closure O&M Plan	The O&M Plan should be updated.	City of Sand Springs	EPA	October 2012	Completed	8/12/2014
OU# 1	Surface Water Sampling	Discontinue Surface Water Sampling	City Of Sand Springs	EPA	4/1/2011	Completed	4/1/2011
OU# 1	Settlement Survey	Continue to complete prior to each five-year review	City Of Sand Springs	EPA	Before October 2015	Completed	7/28/2015
OU# 1	Seep Sampling	Continue to monitor prior to each five-year review and sample if water is present	City Of Sand Springs	EPA	Before October 2015	Completed	7/23/2015
OU# 1	Site Inspections & Maintenance including vent sampling	Continue to complete semiannually and perform maintenance activity as necessary	City Of Sand Springs	EPA	Semi-annual activity to be documented in Annual Reports	Completed	7/23/2015

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement and Site Interviews

A public notice was made available in the local newspaper, the “Tulsa World”, on 6/24/2015, stating that there was a five-year review starting and inviting the public to submit any comments to the DEQ and U.S. EPA. The results of the review and the report will be made available at the Site information repository located at the Tulsa Central Library, 400 Civic Center, Tulsa, Oklahoma, 74103. A second notice will be published in the “Tulsa World” to summarize the findings of the review.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. The results of these interviews are summarized below.

Interviews were conducted with Mr. Hal Cantwell of the DEQ, Frank Weigle of the City of Sand Springs, Scott Stelle of Stelle and Associates, and Brian Mueller of USEPA. Interviews were conducted July 7, 2015 through July 22, 2015. Frank Weigle (Supervisor, Public Works Division (City of Sand Springs)) was interviewed in person. Mr. Brian Mueller spoke with representatives of the Berryhill Fire Department and the Berryhill School District and provided electronic interview forms to be shared with concerned local citizens. No interview forms from local citizens were returned to EPA.

Results of the interview indicate that the remedy is viewed as a success and that there are no outstanding issues. There was also a consensus that options for site reuse should continue to be explored. Complete interviews are included in Appendix B.

Data Review

The 2011 through 2015 Annual Operation and Maintenance Reports were reviewed. Gas vent sampling has been conducted semi-annually since the Fourth Five Year Review and is included in the Annual O&M Reports. The following table includes the gas vent sampling results since the Fourth Five Year Review.

Table 6: Vent Sample Results for July 2011 through December 2015 in Parts Per Million (PPM)

Sample Date		vent 1	vent 2	vent 3	vent 4	vent 5	vent 6	vent 7	vent 8	vent 9	vent 10	vent 11
2011	July											
	FID*	3.6	3.4	952	3	2.7	2.2	9.1	1187	2.1	0.9	0.6
	PID**	0	4.3	22	19.3	17.1	27.4	14.2	22.4	18.1	20	45.8
2011	Dec											
	FID	3200	1900	5542	2.5	1.4	3.7	2.43	987	0	12.1	0
	PID	2.5	1.1	0	0	0	0	0	0	0	0	0
2012	July											
	FID	1127	1880	673	0	0	0	0	1108	0	0	0
	PID	12.4	7.7	2.1	0	0	0	0	0	0	0	0
2012	Dec											
	FID	0	0	0	0	0	0	259.3	0	0	0	0.4
	PID	0	0	0	0	0	0	0	0	0	0	0
2013	June											
	FID	4400	0	0	0	0	0	0	1800	0	230.4	0
	PID	0	25.1	26.5	41.3	27.5	20.4	56.2	8.2	13.8	51.8	8.8
2013	Dec											
	FID	2.4	2.6	431	3.2	1.9	2.2	7.4	487	1.9	0.7	0.5
	PID	0	0	0	0	5.7	7.6	4.4	0.1	2.3	0	0
2014	June											
	FID	3120	0	0	0	0	0	0	1250	0	142	0
	PID	10.6	52.2	3.6	0.2	0.2	0.3	0	0.2	0.8	0.1	0.6
2014	Dec											
	FID	5.8	3.7	3.6	3.3	3.9	3.9	4.0	4.3	3.9	3.7	3.7
	PID	0	0	0	1.8	4.2	0	0	0	0	0	0
2015	July											
	FID	2.1	3200	1732	1.6	1.9	1.9	1.6	9.4	14.5	160.7	16.5
	PID	0	7.8	10.8	7	8	4.7	0.5	0.2	0.3	0.3	1.9
2015	Dec											
	FID	0	0	2.4	0	6	0	0	2410	0	0	0
	PID	0	0	0.8	0	0	5.6	0	0	0	0	0

*FID=Flame Ionization Detector for Methane reading
 **PID= Photo Ionization Detector for Organic Vapor reading

Methane readings at the vents ranged from 0 PPM to 5542 PPM, from 2011 to 2015. The methane gas readings did not exceed the lower explosive limit of 50,000 PPM. The PID readings for volatile organic compounds (VOCs) ranged from 0 PPM to 56.2 PPM from 2011 to 2015. The results of the vent sampling show that the gas collection system is functioning as intended.

Settlement monitoring was conducted in 1990, 1991, 1992, 1993, 1994, 2001, 2006, 2010, and 2015. The next monitoring event is scheduled to be conducted prior to the next five-year review. As presented in Table 7, settlement survey data show minimal movement in the cap surface with no significant indication of either subsidence or bulging of the capped area. Locations of settlement monuments are illustrated in Figure 3.

Table 7: Survey of the Cap Settlement Markers

Year	Marker					
	1	2	3	4	5	6
1990	860.74	847.58	846.15	832.54	822.40	823.34
1991	860.76	847.50	846.17	832.45	822.30	823.21
1992	860.75	847.43	846.01	832.48	822.31	823.23
1993	860.75	847.51	846.13	832.6	822.44	823.36
1994	860.73	847.47	846.09	832.58	NS	823.34
2001	860.75	847.42	846.06	832.55	822.25	823.34
2006	860.76	847.43	845.99	832.58	822.47	823.39
2010	860.69	847.46	845.91	832.61	822.29	823.08
2015	860.71	847.35	845.99	832.56	822.43	823.31

Notes: NS Not Surveyed

The operation and maintenance plan calls for seep sampling to be conducted if water is present once every five years. On July 23, 2015 the seep sample sites were inspected and were found to not be flowing. The seeps were last sampled (flowing) in 1995.

Site Inspection

The inspection of the Site was conducted on 7/10/2015. In attendance were Amber Edwards and Hal Cantwell of DEQ; Brian Mueller and Joan Drammeh of U.S. EPA; Scott Stelle of Stelle and Associates, and Frank Weigle from the City of Sand Springs. The purpose of the inspection was to assess the protectiveness of the remedy. There were no issues observed during the site inspection. The Site Inspection Checklist is included in Appendix C.

V. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

Completed Remedial Actions		Yes/No/NA	Performance Data Collected Since Last 5YR?	Performance Issues Identified Since Last 5YR?
Remedial Action Performance	Whether the remedial action continues to operate and function as designed	Yes	No	No
	Whether remedy is achieving progress towards restoration goals?	Yes	No	No
	Whether containment is effective	Yes	No	No
System Operations/O&M	Whether operating procedures, as implemented, will maintain the effectiveness of remedy	Yes	No	No
	Whether large variances in O&M costs could indicate a potential remedy problem	No	No	No
Monitoring Activities	Whether periodic monitoring activities are being conducted?	Yes	Yes	No
	Are monitoring activities adequate to determine remedy effectiveness and protectiveness?	Yes	NA	NA
Opportunities for Optimization	Whether opportunities exist to improve the performance and/or reduce costs of monitoring, sampling, and treatment systems	No	No	No
Early Indicators of Potential Issues	Whether frequent equipment breakdowns or changes indicate a potential protectiveness-affecting issue	No	No	No
Implementation of Institutional Controls and Other Measures	Are access controls (e.g., fencing and warning signs) in place?	Yes	Yes	No
	Are access controls effective in preventing exposure?	Yes	Yes	No
	Are ICs in place?	Yes	Yes	No
	Are ICs effective in preventing exposure?	Yes	Yes	No

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy section still valid?

Completed Remedial Actions		Yes/No	Does This Affect Remedy Protectiveness?
Changes in Standards and TBCs	Whether standards identified in the ROD have been revised since the last FYR	No	No
	Whether TBCs used in selecting cleanup levels have changed since the last FYR	No	No
Changes in Exposure Pathways	Whether land use or expected land use has changed since the last FYR	No	No
	Whether human health route of exposure has changed since the last FYR	No	No
	Whether human health receptors have changed since the last	No	No

Completed Remedial Actions		Yes/No	Does This Affect Remedy Protectiveness?
	FYR		
	Whether ecological route of exposure has changed since the last FYR	No	No
	Whether ecological receptors have changed since the last FYR	No	No
	Are there newly identified contaminants since the last FYR	No	No
	Are there newly identified contaminant source areas since the last FYR	No	No
	Are there unanticipated toxic byproducts of the remedy since the last FYR	No	No
	Whether physical site conditions have changed since the last FYR	No	No
Changes in Toxicity and Other Contaminant Characteristics	Whether toxicity factors for contaminants of concern at the site have changed in a way that could affect remedy protectiveness since the last FYR	No	No
	Whether the contaminant characteristics have changed in a way that could affect remedy protectiveness since the last FYR	No	No
Changes in Risk Assessment Methods	Whether the risk assessment methodologies have changed in a way that could affect the remedy protectiveness since the last FYR	No	No
Review of RAOs	Whether new or changed site conditions impact the RAOs and remedy protectiveness	No	No

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Completed Remedial Actions		Yes/No	Does This Affect Remedy Protectiveness?
Other Information	Whether newly identified ecological risks have been found	No	No
	Whether there are impacts from natural disasters	No	No
	Whether any other potential site changes were identified during the five-year review process	No	No

Technical Assessment Summary

The remedy continues to function as intended in the 1987 ROD based on the site inspection and technical review. There were no observed issues at the site. The landfill is operating as intended by the ROD. The institutional controls are functioning as intended.

There were no changes in the land use activities or physical conditions since the first five-year review that would affect the protectiveness of the remedy.

No new laws or regulations have been promulgated or enacted that would call into question the effectiveness of the remedy to protect human health and the environment. There is no other information that calls into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS AND FOLLOW-UP ACTIONS

There are currently no issues/recommendations or follow-up actions that affect the protectiveness of the remedy.

The following recommendation will improve management of O&M, but does not affect current protectiveness and was identified during the Five-Year Review:

- EPA should work with the City of Sand Springs to recommend/approve a specific spray product to control woody vegetation growth along the chain link fence on the perimeter of the site. This issue was brought up by Frank Weigle (Supervisor, Public Works Division) of the City of Sand Springs during the Five Year Review interview.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
<i>Operable Unit:</i> OU# 1	<i>Protectiveness Determination:</i> Protective
<i>Protectiveness Statement:</i> The remedy implemented at the Compass Industries Superfund Site to date is protective of human health and the environment.	

Sitewide Protectiveness Statement
<i>Protectiveness Determination:</i> Protective
<i>Protectiveness Statement:</i> The remedy implemented at the Compass Industries Superfund Site to date is protective of human health and the environment. The landfill cap prevents infiltration of water, and the gas transmission geotextile layer collects released gases. The subsurface drainage system diverts contaminated groundwater to the upper perched water table. Seep sampling occurs every five years when water is present. Vent sampling occurs semiannually. The Performance Monitoring Program continues to verify that the main engineered elements of the remedy are performing as designed. The site is inspected semiannually to check the integrity of the fence, gas vents, and cap, and for any settlement of the landfill. The vegetation and slope at the site is maintained to prevent erosion. Institutional controls restrict the use of the site. No issues were identified during this five year review process that affect the protectiveness of the remedy.

VIII. NEXT REVIEW

The next five-year review report for the Compass Industries Superfund Site is required five years from the completion date of this review.

APPENDIX A-DOCUMENTS REVIEWED

Documents Reviewed

- Bechtel Environmental, Inc., 1991a. *Remedial Action Report for the Compass Industries Superfund Site, Tulsa County, Oklahoma*. January 28, 1991
- Bechtel Environmental, Inc., 1991b. Post Closure Operation and Maintenance Plan for Compass Industries Superfund Site. August 1991.
- City of Sand Springs, 2011. *2011 Annual Operation and Maintenance Report, Compass Industries Superfund Site, Tulsa County, Oklahoma*. December 31, 2011.
- City of Sand Springs, 2012. *2012 Annual Operation and Maintenance Report, Compass Industries Superfund Site, Tulsa County, Oklahoma*. December 31, 2012.
- City of Sand Springs, 2013. *2013 Annual Operation and Maintenance Report, Compass Industries Superfund Site, Tulsa County, Oklahoma*. December 31, 2013.
- City of Sand Springs, 2014. *2014 Annual Operation and Maintenance Report, Compass Industries Superfund Site, Tulsa County, Oklahoma*. December 31, 2014.
- City of Sand Springs, 2015. Revised Post Closure Operation and Maintenance Plan for Compass Industries Superfund Site. July 2015.
- U. S. Environmental Protection Agency (EPA), 1987. *Summary of Remedial Alternative Selection, Compass Industries Landfill, Tulsa County, Oklahoma* (Record of Decision). September 1987.
- U. S. Environmental Protection Agency (EPA), 1992. *Close Out Report, Compass Industries Landfill Superfund Site, Tulsa County, Oklahoma*. June 30, 1992.
- U. S. Environmental Protection Agency (EPA), 2000. First Five-Year Review Final Report, Compass Industries Superfund Site, Tulsa County, Oklahoma. September 26, 2000.
- U. S. Environmental Protection Agency (EPA), 2001a. *Comprehensive Five-Year Review Guidance*. EPA 540-R-01-007. June 2001.
- U. S. Environmental Protection Agency (EPA), 2001b. Second Five-Year Review Final Report, Compass Industries Superfund Site, Tulsa County, Oklahoma. December 26, 2001.
- U. S. Environmental Protection Agency (EPA), 2002a. Removal of the Direct Final Notice of Deletion Amendment, *Compass Industries Landfill Superfund Site, Tulsa County, Oklahoma*. March 1, 2002, published March 19, 2002.
- U. S. Environmental Protection Agency (EPA), 2002b. *Notice of Intent to Delete, Compass Industries Landfill Superfund Site, Tulsa County, Oklahoma*. May 1, 2002, published May 16, 2002.
- U. S. Environmental Protection Agency (EPA), 2002c. *Notice of Deletion, Compass Industries*

Landfill Superfund Site, Tulsa County, Oklahoma. June 28, 2002, published July 18, 2002.

U. S. Environmental Protection Agency (EPA), 2006. *Third Five-Year Review Final Report, Compass Industries Superfund Site, Tulsa County, Oklahoma.* Prepared for USEPA by CH2M Hill. April 24, 2006.

U. S. Environmental Protection Agency (EPA), 2011. *Fourth Five-Year Review Final Report, Compass Industries Superfund Site, Tulsa County, Oklahoma.* April 5, 2011.

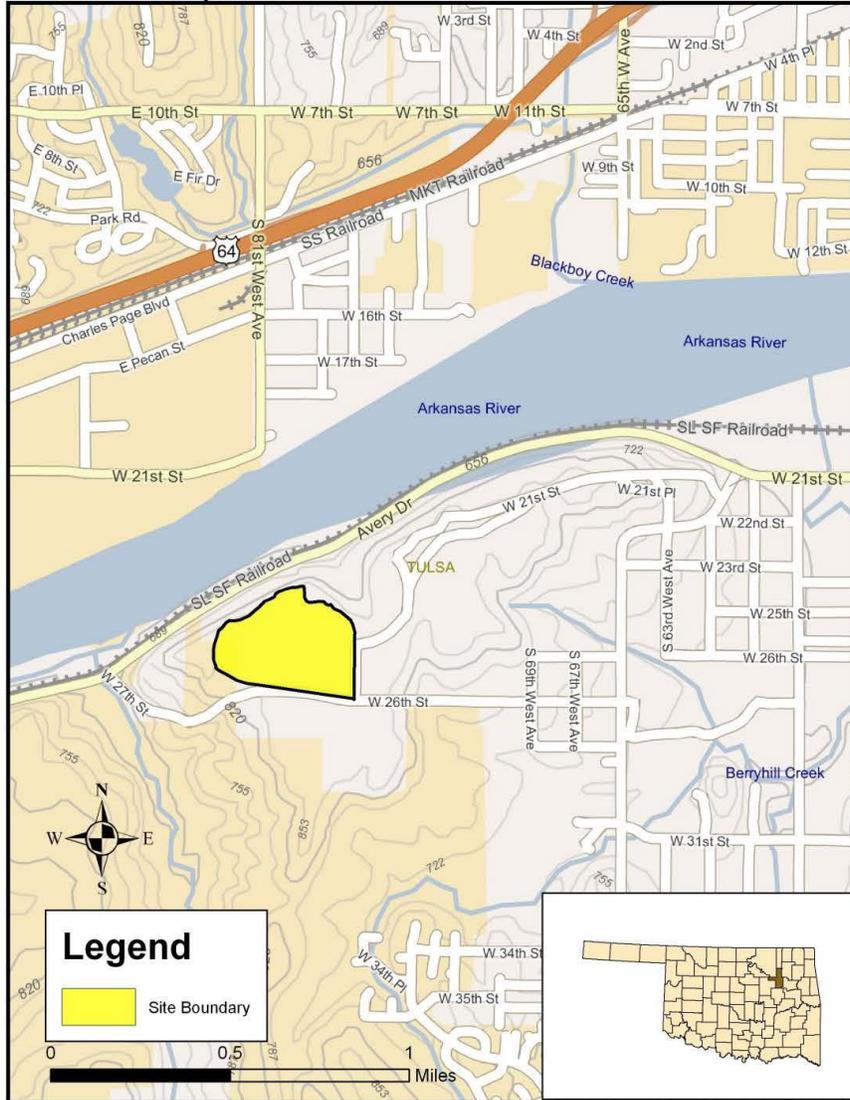
Stelle & Associates, Inc. (Stelle), 2015a. *Compass Landfill Site Settlement Marker Report.* July 20, 2015.

Stelle & Associates, Inc. (Stelle), 2015b. *Compass Industries Superfund Site Monitoring Data for the Settlement Markers.* July 20, 2015.

Stelle & Associates, Inc. (Stelle), 2015c. *Compass Industries Site Vent Monitoring.* July 23, 2015.

APPENDIX B-FIGURES

Compass Industries Landfill Location



Map created by Jacob Bankhead on 6/9/2010.

We make every effort to provide and maintain accurate, complete, usable, and timely information. However, some data and information on this map may be preliminary or out of date and is provided with the understanding that it is not guaranteed to be correct or complete. Conclusions drawn from, or actions undertaken on the basis of, such data and information are the sole responsibility of the user.

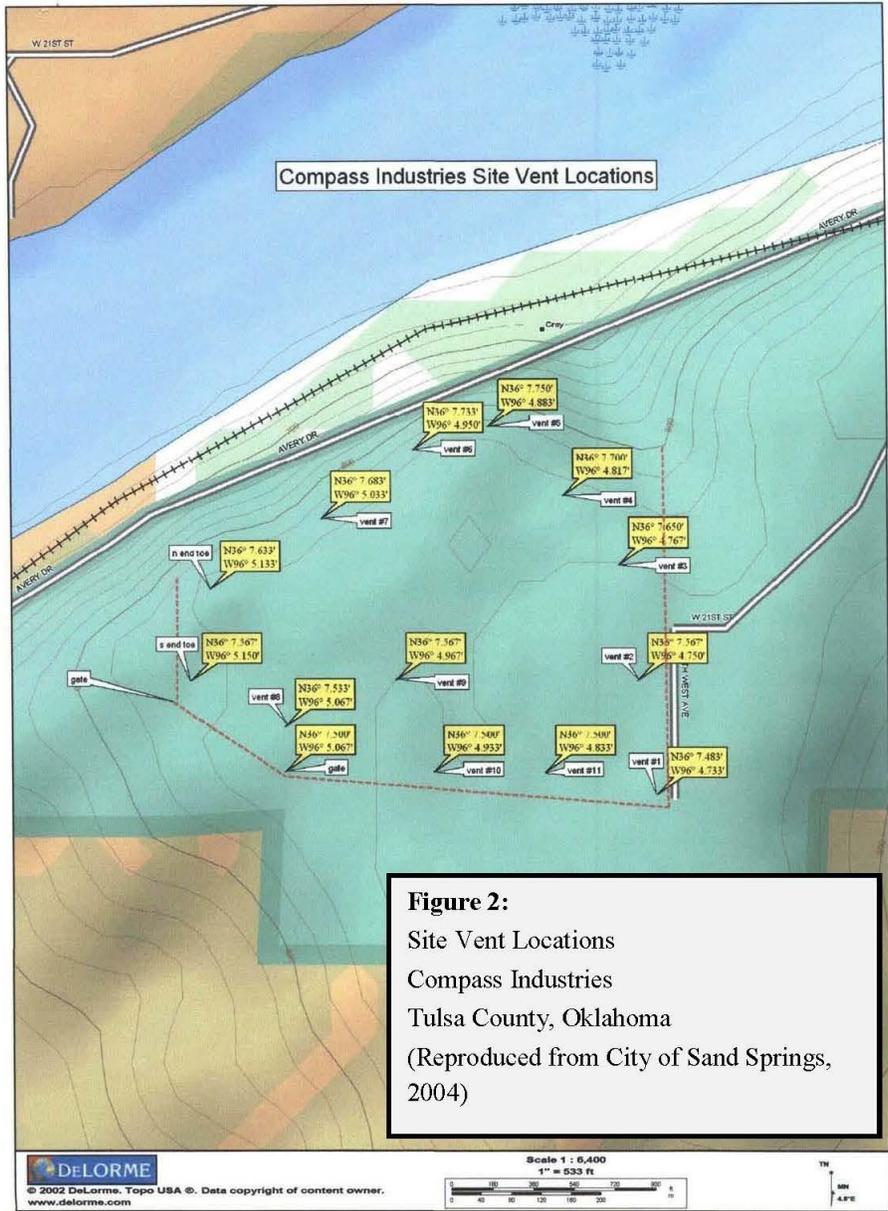
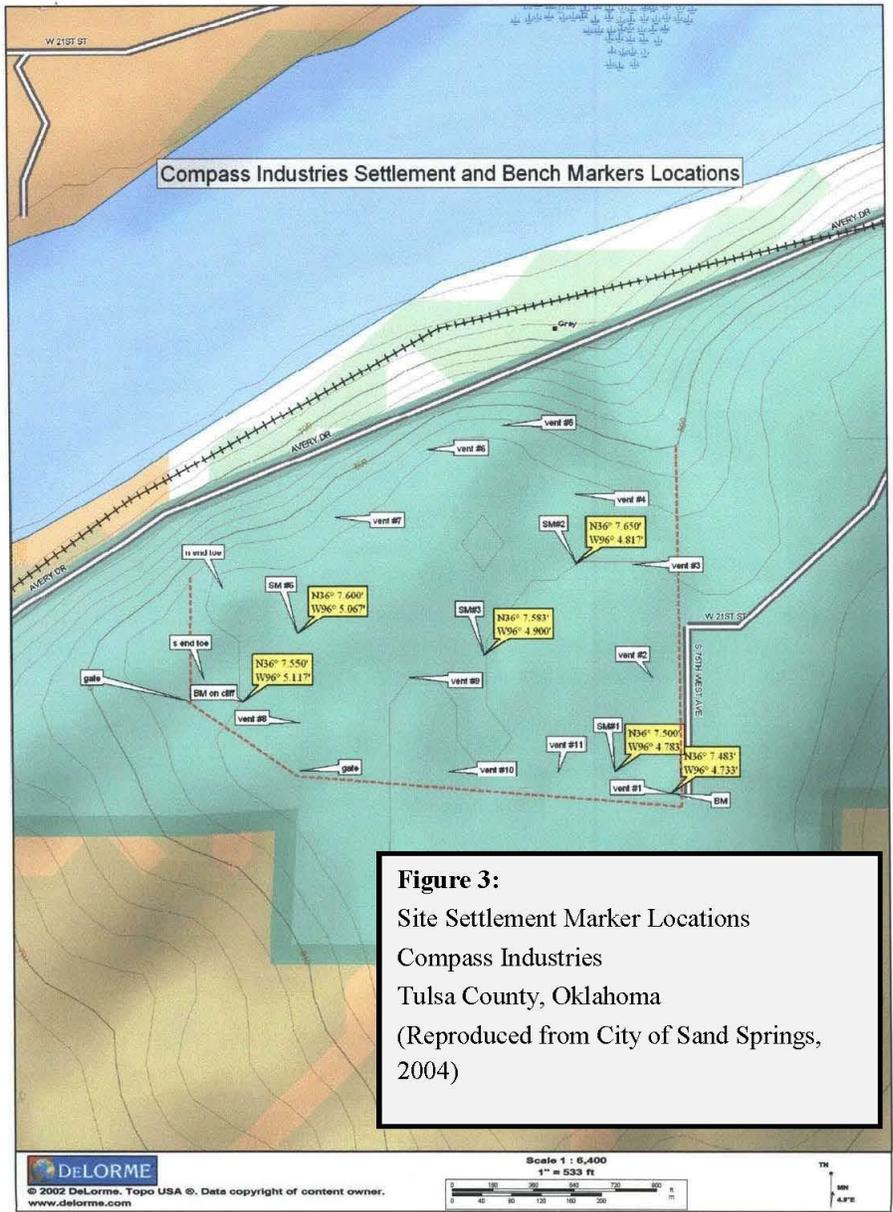


Figure 2:
 Site Vent Locations
 Compass Industries
 Tulsa County, Oklahoma
 (Reproduced from City of Sand Springs,
 2004)



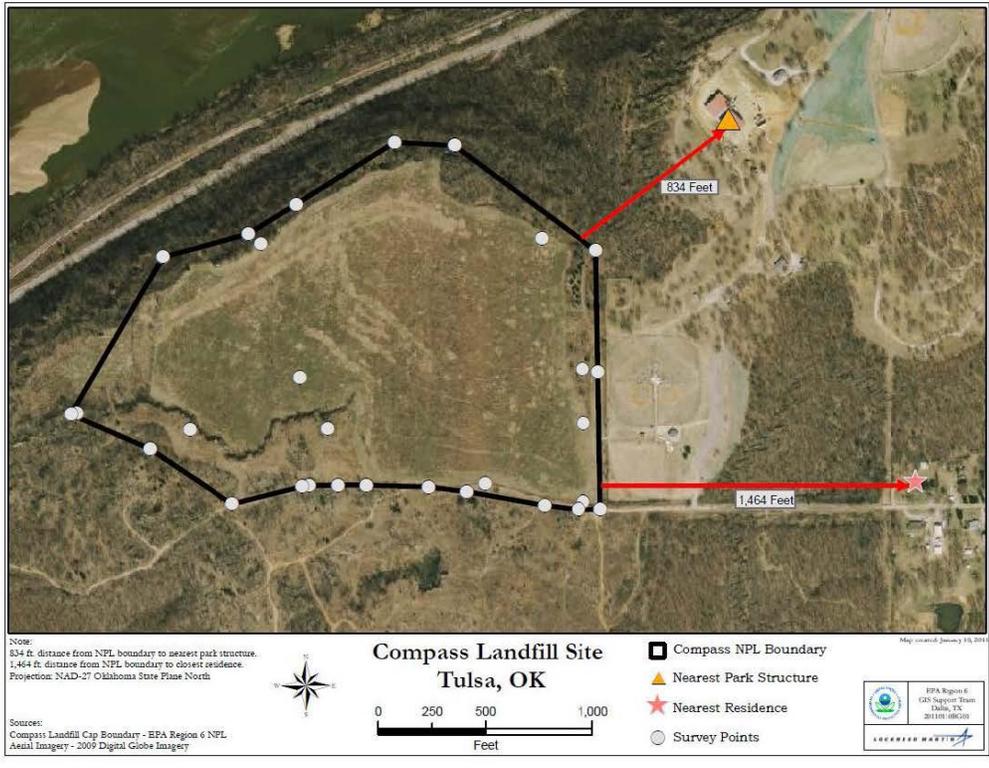


Figure 4: Compass Landfill - Distances from nearby facilities

*Reproduced from the Fourth Five Year Review (EPA 2011)

APPENDIX C-SITE INSPECTION/INTERVIEWS

Five Year Review Site Inspection Checklist

Site Inspection Checklist

I. SITE INFORMATION													
Site name: Compass Industries Superfund Site	Date of inspection: 7/23/15												
Location and Region: Sand Springs, OK Region 6	EPA ID: OKD980620983												
Agency, office, or company leading the five-year review: Oklahoma DEQ	Weather/temperature: sunny 85°												
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input checked="" type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other Ground water Sampling</td> <td></td> </tr> </table>		<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input type="checkbox"/> Other Ground water Sampling	
<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation												
<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment												
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls												
<input type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input type="checkbox"/> Other Ground water Sampling													
Attachments: <input checked="" type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached													
II. INTERVIEWS (Check all that apply)													
1. O&M site manager <u>Frank Weigle</u> <u>Division Supervisor, City of Sand Springs</u> <u>7/16/15</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>918-246-2590</u> Problems, suggestions; <input checked="" type="checkbox"/> Report attached _____ _____													
2. O&M staff _____ <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____													

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency DEQ
 Contact Hal Cartwell Environmental Programs Specialist 7/11/15 702-5139
 Name Title Date Phone no.
 Problems; suggestions; Report attached

Agency USEPA
 Contact Brian Mueller Regional Project Manager 7/22/15 214-665-7167
 Name Title Date Phone no.
 Problems; suggestions; Report attached

Agency _____
 Contact _____
 Name Title Date Phone no.
 Problems; suggestions; Report attached

Agency _____
 Contact _____
 Name Title Date Phone no.
 Problems; suggestions; Report attached

4. **Other interviews (optional)** Report attached.

Scott Stelle, Stelle & Associates, Inc.

<u>Scott Stelle, Stelle & Associates, Inc.</u>

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks _____	<input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	Site-Specific Health and Safety Plan <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A

IV. O&M COSTS			
1.	O&M Organization	<input type="checkbox"/> State in-house <input type="checkbox"/> Contractor for State <input type="checkbox"/> PRP in-house <input type="checkbox"/> Contractor for PRP <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Contractor for Federal Facility <input type="checkbox"/> Other <u>City of Sand Springs and Contractor Stelle and Associates</u>	
2.	O&M Cost Records	<input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> Funding mechanism/agreement in place Original O&M cost estimate _____ <input type="checkbox"/> Breakdown attached Total annual cost by year for review period if available	
	From _____ To <u>2011</u>	<u>\$4,165.00</u>	<input type="checkbox"/> Breakdown attached
	Date Date	Total cost	
	From _____ To <u>2012</u>	<u>\$4,190.00</u>	<input type="checkbox"/> Breakdown attached
	Date Date	Total cost	
	From _____ To <u>2013</u>	<u>\$7,500.00</u>	<input type="checkbox"/> Breakdown attached
	Date Date	Total cost	
	From _____ To <u>2014</u>	<u>\$6,166.00</u>	<input type="checkbox"/> Breakdown attached
	Date Date	Total cost	
	From _____ To _____	_____	<input type="checkbox"/> Breakdown attached
	Date Date	Total cost	
3.	Unanticipated or Unusually High O&M Costs During Review Period Describe costs and reasons: <u>extra consultant cost in 2014 for EPA visit during site walkover & vent sampling event.</u>		
V. ACCESS AND INSTITUTIONAL CONTROLS <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
A. Fencing			
1.	Fencing damaged	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Gates secured <input type="checkbox"/> N/A Remarks _____	
B. Other Access Restrictions			
1.	Signs and other security measures	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A Remarks <u>finest signs intact</u>	

C. Institutional Controls (ICs)				
1. Implementation and enforcement				
Site conditions imply ICs not properly implemented		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Type of monitoring (e.g., self-reporting, drive by) _____				
Frequency _____				
Responsible party/agency _____				
Contact _____				
	Name	Title	Date	Phone no.
Reporting is up-to-date		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Reports are verified by the lead agency		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Violations have been reported		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Other problems or suggestions: <input type="checkbox"/> Report attached		_____		
_____		_____		
_____		_____		
2. Adequacy <input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A				
Remarks _____				

D. General				
1. Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident				
Remarks _____				

2. Land use changes on site <input type="checkbox"/> N/A				
Remarks _____				

3. Land use changes off site <input type="checkbox"/> N/A				
Remarks _____				

VI. GENERAL SITE CONDITIONS				
A. Roads <input type="checkbox"/> Applicable <input type="checkbox"/> N/A				
1. Roads damaged <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A				
Remarks _____				

B. Other Site Conditions			
Remarks _____ _____ _____ _____			
VII. LANDFILL COVERS <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
A. Landfill Surface			
1.	Settlement (Low spots) Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input checked="" type="checkbox"/> Settlement not evident
2.	Cracks Lengths _____ Remarks _____	<input type="checkbox"/> Location shown on site map Widths _____ Depths _____	<input type="checkbox"/> Cracking not evident
3.	Erosion Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input type="checkbox"/> Erosion not evident
4.	Holes Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input type="checkbox"/> Holes not evident
5.	Vegetative Cover <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____	<input type="checkbox"/> Grass <input type="checkbox"/> Cover properly established	<input type="checkbox"/> No signs of stress
6.	Alternative Cover (armored rock, concrete, etc.) <input type="checkbox"/> N/A Remarks _____		
7.	Bulges Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Height _____	<input type="checkbox"/> Bulges not evident

8.	Wet Areas/Water Damage <input checked="" type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____	wet area on west side where water drains The site was wet.
9.	Slope Instability Areal extent _____ Remarks _____	<input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of slope instability	
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay	
2.	Bench Breached Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay	
3.	Bench Overtopped Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A or okay	
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement Depth _____	
2.	Material Degradation Material type _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation Areal extent _____	
3.	Erosion Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of erosion Depth _____	

4.	Undercutting	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	Obstructions	Type _____	<input type="checkbox"/> No obstructions
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	Excessive Vegetative Growth	Type _____	
	<input type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks _____		
D. Cover Penetrations <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Vents	<input type="checkbox"/> Active <input checked="" type="checkbox"/> Passive	
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance
	<input type="checkbox"/> N/A		
	Remarks _____		
2.	Gas Monitoring Probes		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	Remarks _____		
3.	Monitoring Wells (within surface area of landfill)		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	Remarks _____		
4.	Leachate Extraction Wells		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	Remarks _____		
5.	Settlement Monuments	<input checked="" type="checkbox"/> Located	<input checked="" type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A
	Remarks _____		

E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____	
2.	Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____	
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____	
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	Outlet Pipes Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
2.	Outlet Rock Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____	
2.	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____	
3.	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
4.	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	

H. Retaining Walls		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement _____	Vertical displacement _____	
	Rotational displacement _____		
	Remarks _____		
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks _____		
I. Perimeter Ditches/Off-Site Discharge		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Areal extent _____	Type _____	
	Remarks _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
	Areal extent _____	Depth _____	
	Remarks _____		
4.	Discharge Structure	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks _____		
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Performance Monitoring	Type of monitoring _____	
	<input type="checkbox"/> Performance not monitored		
	Frequency _____	<input type="checkbox"/> Evidence of breaching	
	Head differential _____		
	Remarks _____		

C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Treatment Train (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____
2.	Electrical Enclosures and Panels (properly rated and functional) <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
3.	Tanks, Vaults, Storage Vessels <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____
4.	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
5.	Treatment Building(s) <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____
D. Monitoring Data N/A	
1.	Monitoring Data <input type="checkbox"/> Is routinely submitted on time <input type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining
D. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____

X. OTHER REMEDIES	
XI. OVERALL OBSERVATIONS	
A.	Implementation of the Remedy
	The implemented remedy is protective of human health & the environment. The remedy is functioning as intended.
B.	Adequacy of O&M
	Sand Spring is perform routine maintenance and inspections.
C.	Early Indicators of Potential Remedy Problems
D.	Opportunities for Optimization

Compass Industries Five Year Review Site Inspection Team Roster

Name	Title
Amber Edwards	Environmental Programs Specialist IV, Oklahoma Department of Environmental Quality
Hal Cantwell	Environmental Programs Specialist IV, Oklahoma Department of Environmental Quality
Brian Mueller	Regional Project Manager, USEPA Region 6
Joan Drammeh	Community Involvement Coordinator, USEPA Region 6
Frank Weigle	Supervisor, City of Sand Springs, Public Works Division
Scott Stelle	President, Stelle & Associates

Photographs



Photo # 1
Photographer: Amber Edwards
Date: July 10, 2015
Subject: Entrance of site looking North



Photo # 2
Photographer: Amber Edwards
Date: July 10, 2015
Subject: Entrance of site looking Northwest



Photo # 3

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Vent #2 looking East



Photo # 4

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Looking NW from NE corner



Photo # 5

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Looking S from N side



Photo # 6

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Looking S from N side



Photo # 7

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Edge of cap looking N



Photo # 8

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Edge of cap looking NW



Photo # 9

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Vent looking N



Photo # 10

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Looking N at north end of site



Photo # 11

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Swale on the NW side of the site



Photo # 12

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Looking NW



Photo # 13

Photographer: Amber Edwards

Date: July 10, 2015

Subject: West side of site where water drains



Photo # 14

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Overview of site looking NE



Photo # 15

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Overview of site looking NW



Photo # 16

Photographer: Amber Edwards

Date: July 10, 2015

Subject: Fence on south side with brush growing into it

Interview Documentation

INTERVIEW DOCUMENTATION FORM

The following is a list of individual interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews.

<u>Hal Cantwell</u> Name	<u>Environmental Programs Specialist</u> Title/Position	OK Department of Environmental Quality Organization	<u>7/7/15</u> Date
<u>Frank Weigle</u> Name	<u>Division Supervisor</u> Title/Position	<u>City of Sand Springs</u> Organization	<u>7/10/15</u> Date
<u>Brian Mueller</u>	Remedial Project <u>Manager</u>	<u>USEPA Region 6</u>	<u>7/15/15</u>
<u>J. Scott Stelle</u> Name	<u>R.E. M.</u> Title/Position	<u>Stelle & Associates</u> Organization	<u>7/22/15</u> Date

INTERVIEW RECORD

Site Name: Compass Industries Superfund Site	EPA ID No.: OKD980620983
Subject: Five Year Review	Date: 7/7/15
Type: Email	

Contact Made By:

Name: Amber Edwards	Title: Environmental Programs Specialist IV	Organization: Oklahoma Department of Environmental Quality
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Individual Contacted:

Name: Hal Cantwell	Title: Environmental Programs Specialist IV	Organization: Oklahoma Department of Environmental Quality
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Cell phone No: (405) 702-5139	Street Address: 707 N Robinson
E-Mail Address: hal.cantwell@deq.ok.gov	City, State, Zip: Oklahoma City, OK 73101

Summary of Conversation

1. What is your overall impression of the work completed at the site since the last five year review?

Positive – consistent with the requirements and intent of the Remedy

2. Are you aware of any ongoing community concerns regarding the site’s operation and maintenance or other issues?

I am aware of no community concerns regarding the Site.

3. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please describe purpose and results.

There have been no recent state activities at the Site that I am aware of.

4. Are you aware of any unanticipated events, incidents, or activities related to the site requiring a response from your office since the last five year review? If so, please give details of the events and results of the responses.

There have been no unanticipated events, incidents, or activities at the Site that I am aware of.

5. Do you feel well informed about the sites activities and progress?

Yes

6. Do you have any comments, suggestions, or recommendations regarding the site’s management or operation?

I believe the City of Sand Springs is maintaining and managing the Site in a competent and effective manner.

INTERVIEW RECORD

Site Name: Compass Industries Superfund Site		EPA ID No.: OKD980620983
Subject: Five Year Review		Date: 7/10/15
Type: Face to face at Sand Springs Public Works Office		
Contact Made By:		
Name: Amber Edwards	Title: Environmental Programs Specialist IV	Organization: Oklahoma Department of Environmental Quality
Individual Contacted:		
Name: Frank Weigle	Title: Division Supervisor	Organization: City of Sand Springs
Phone No: 918-246-2590	Street Address: 109 N. Garfield Avenue	
E-Mail Address: feweigl@sandsspringsok.org	City, State, Zip: Sand Springs, OK 74063	
Summary of Conversation		
<ol style="list-style-type: none"> 1. What is your overall impression of the project? <i>An excellent rehabilitation. Referenced people familiar with work condition. Excellent corrective measure and O&M Plan . Good for local communities and state. Food for potential long term development of the nearby Arkansas River.</i> 2. Are you aware of any ongoing community concerns regarding the site's operation and maintenance or other issues? <i>No, none.</i> 3. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results. <i>Yes. Required O&M Plan execution. We schedule and take part in site visits and maintenance and all inspections. We file the site reports required by the current O&M Plan.</i> 4. Are you aware of any unanticipated events, incidents, or activities related to the site requiring a response from your office since the last five year review? If so, please give details of the events and results of the responses. <i>Normal on and off routine maintenance of gates, signs, fence, caused by remote location and proximity to off-road vehicular activities. Normal vegetation growth at edge of cap.</i> 5. Have there been any significant changes in the site status or maintenance requirements since completion of the last five year review? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts. <i>No, none.</i> 6. Do you feel well informed about the site's activities and progress? <i>Yes, the EPA acceptance and assistance with O&M activities and requirements and reporting the annual reports and 5Year reviews.</i> 7. Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or recent maintenance activities? <i>Request permission and recommendation of specific spray product to control vegetation growth along chain-link fence. Offer suggestion to schedule future 5Year Review inspections in the fall of the year.</i> 		

INTERVIEW RECORD

Site Name: Compass Industries Superfund Site		EPA ID No.: OKD980620983
Subject: Five Year Review		Date: 7/15/15
Type: Email		
Contact Made By:		
Name: Amber Edwards	Title: Environmental Programs Specialist IV	Organization: Oklahoma Department of Environmental Quality
Individual Contacted:		
Name: Brian Mueller	Title: Remedial Project Manager	Organization: USEPA Region 6
Telephone No: 214-665-7167	Street Address:	City, State, Zip: Dallas, TX
Fax No:		
E-Mail Address: Mueller.brian@epa.gov		
Summary of Conversation		
<ol style="list-style-type: none"> 1. What is your overall impression of the project? <i><u>My overall impression of the project is that it is that it was very well done. There are no issues that need to be addressed.</u></i> 2. Are you aware of any ongoing community concerns regarding the site's operation and maintenance or other issues? <i><u>I am not aware of any community concerns. I have received one request about possible impacts to adjacent property owners.</u></i> 3. Are you aware of any unanticipated events, incidents, or activities related to the site requiring a response from your office since the last five year review? If so, please give details of the events and results of the responses. <i><u>I am not aware of any unanticipated events, incidents, or activities related to the site requiring a response from my office since the last five year review.</u></i> 4. Have there been any significant changes in the site status or maintenance requirements since completion of the last five year review? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts. <i><u>There have been no any significant changes in the site status or maintenance requirements since completion of the last five year review.</u></i> 5. Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or recent maintenance activities? <i><u>I do not have comments, suggestions, or recommendations regarding the site's management or operation. The PRP is doing an excellent job of maintaining the site.</u></i> 		

INTERVIEW RECORD

Site Name: Compass Industries Superfund Site	EPA ID No.: OKD980620983
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Subject: Five Year Review	Date: 7/22/15
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Type: mail	
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Contact Made By:

Name: Amber Edwards	Title: Environmental Programs Specialist IV	Organization: Oklahoma Department of Environmental Quality
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Individual Contacted:

Name: J. Scott Stelle	Title: R. E. M.	Organization: Stelle & Associates
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Telephone No:	Street Address:
Fax No:	
E-Mail Address:	
	City, State, Zip:

Summary of Conversation

1. What is your overall impression of the project?
The work completed at the compass site is only the highest quality, performed by highly regarded professionals.
2. Are you aware of any ongoing community concerns regarding the site's operation and maintenance or other issues?
None, Most people don't even know it is there.
3. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.
We do inspections twice a year and monitor the vent gases. We measure gas flow, methane content and VOC's.
4. Are you aware of any unanticipated events, incidents, or activities related to the site requiring a response from your office since the last five year review? If so, please give details of the events and results of the responses.
None
5. Have there been any significant changes in the site status or maintenance requirements since completion of the last five year review? If so, do they affect the protectiveness or effectiveness of the remedy?
No.
6. Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or recent maintenance activities?
No.

Interview Forms/Questions Sent to Berryhill Fire Department and Berryhill School District

Compass, Industries Superfund Site

Five-Year Review Interview Form

Site Name: Compass, Industries.

EPA ID **OKD980748446**

No.:

Interviewer Name: Brian Mueller

Affiliation: EPA

Subject Name: Resident

Affiliation:

Subject Contact

Information:

Date:

Interview Format (circle one): In Person Phone Mail Other: EMAIL

Interview Category: **Residents**

1. Are you aware of the environmental issues at the Site and what cleanup activities have occurred?
2. What is your general impression of the work conducted at the Site during the past five years?
3. What effect has this site had on the surrounding community, if any?
4. Are you aware of any community concerns regarding the site or its operation and administration? If so, please provide details
5. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
6. Do you feel well informed about the site's activities and progress?
7. Do you own a private well in addition to accessing municipal water supplies? If so, for what purpose(s) is your private well used?
8. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

EPA did not receive any replies from the Berryhill community. The Berryhill community is located within 1 mile of the site.

APPENDIX D-INSTITUTIONAL CONTROLS

Deed Notice Memorandum

Memorandum

July 23, 2015

To: Compass Industries File

From: Amber Edwards

Re: Deed Notice Search for the Compass Industries Superfund Site

On July 23, 2015, Amber Edwards and Hal Cantwell from the DEQ went to the County Clerk, Registrar of Deeds Office at the Tulsa County Court House in Tulsa to search the records to see if the deed notices filed by the DEQ for the Compass Industries Superfund Site could be found easily by the public. By searching the county's records on computer workstations in the Registrar of Deeds Office anyone can find both deed notices with only the legal descriptions of the properties. The deed information is provided in the tables below:

Compass Industries	
Legal Description:	Lots 3 & 4, S18, T19N, R12E; Lot 6 NE1/4 SE1/4, S13, T19N, R11E
Date filed:	09/29/06
Document Number:	2006113074
Number of Pages:	7

We also tried to visit the Tulsa City Library to view the documents in the public repository. The library was closed for renovations.

Tulsa County Clerk - FARLENE WILSON
Doc # 2006-113074 Pages 1
Receipt # 888572 09/29/06 13:07:13
Fee 25.00



OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY OKLAHOMA
LAND PROTECTION DIVISION DEPT. OF ENVIRONMENTAL QUALITY

OCT - 4 2006

FILED BY: *SM*
HEARING CLERK

DEQ Case No: 06-297 DN

*11/13/06
1677
C.K.S.
7301-1677*

In Re:)
)
Compass Industries Landfill)
(Avery Drive) Superfund Site,)
)
DEED NOTICE.)

**NOTICE OF REMEDIATION OR RELATED ACTION TAKEN PURSUANT TO THE
FEDERAL COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION
AND LIABILITY ACT and
CREATION OF EASEMENT**

LEGAL BASIS FOR NOTICE:

The Oklahoma Department of Environmental Quality ("DEQ") hereby files this NOTICE OF REMEDIATION OR RELATED ACTION TAKEN PURSUANT TO THE FEDERAL COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT AND CREATION OF EASEMENT (hereinafter "Notice") pursuant to Oklahoma Statutes, 27A § 2-7-133 (B). This Notice does not grant any right to any person not already allowed by law. This Notice shall not be construed to authorize or encourage any person or other legal entity to cause or increase pollution, to avoid compliance with State or Federal laws and regulations regarding pollution or to in any manner escape responsibility for maintaining environmentally sound operations.

The DEQ may take administrative or civil action to recover costs or to compel compliance with the below described "Land Use Restrictions" and to prevent damage to, or interference with the below described "Engineering Controls" and "Continuing Operation, Maintenance and Monitoring." The Land Use Restrictions, Engineering Controls and Continuing Operation, Maintenance and Monitoring will apply to the Affected Property and to persons who own and/or use the Affected Property until such time as the DEQ, with written notice to the U.S. Environmental Protection Agency (EPA), files a subsequent Notice that changes or removes the Land Use Restrictions, Engineering Controls and Continuing Operation, Maintenance and Monitoring set forth below. Activities that cause or could cause damage to the Remedy or the Engineering Controls described herein below, or recontamination of soil or groundwater are prohibited.

The owner of the below described Affected Property has the legal authority to create, and does hereby voluntarily create, an easement granted to the DEQ and its employees and agents, for ingress and egress through, across and onto the Affected Property to assure the ongoing protection of the remedy, engineering controls and land use restrictions described herein below. This easement touches and concerns the land, runs with the land, is legally binding on all future

owners of the Affected Property and will only be removed or modified if and when the DEQ, with written notice to the EPA, modifies or removes its land use restrictions or engineering controls in the manner described herein below.

REASON FOR NOTICE:

The Compass Site, the Affected Property described below, operated as a municipal landfill between 1972 and 1976 under a permit issued by the Oklahoma State Department of Health. During the operation of the Site, various materials, principally waste jet fuel, oily sludges, miscellaneous solvents, acids, caustics and benzene, were disposed of in the landfill that were not allowed by the permit for the Site.

In September 1983, the Compass Site was proposed for the National Priorities List (NPL), and was listed in September 1984. The Site was addressed through a Record of Decision dated September 1987 and a Remedial Action that was completed in June 1991 involving the installation of a clay cap and a geosynthetic liner. The Site was delisted from the NPL in July 2002.

Presently, the Site is undergoing a Five-Year review to assure that human health and the environment are being protected by the Remedial Action. Institutional Controls are needed to ensure the protectiveness of the remedy. Therefore, site information regarding location and wastes will be filed in the form of this Notice in the Deed Records to inform the public of site restrictions and contamination.

AFFECTED PROPERTY:

The survey of the Compass Industries Site (also known as the Chandler Park Landfill, Chandler Dump, Tulsa Refuse Dump Number 1, and the Berryhill Site) is appended as Attachment A to this notice. The legal description of the Site is:

A tract of land being a part of Government Lots 3 and 4, Section 18, Township 19 North, Range 12 East AND being a part of Government Lot 6 and a part of the Northeast Quarter (NE/4) of the Southeast Quarter (SE/4) of Section 13, Township 19 North, Range 11 East, all in Tulsa County, State of Oklahoma, according to the U.S. Government Survey thereof, and all being more particularly described as follows:

COMMENCING at the Northwest corner of said Government Lot 4; Thence S1°20'42"E a distance of 506.19 feet to the POINT OF BEGINNING; Thence S75°41'56"W a distance of 338.55 feet to a point; Thence N56°03'38"W a distance of 461.97 feet to a point; Thence N65°38'30"W a distance of 400.87 feet to a point; Thence N30°03'07"E a distance of 352.76 feet to a point; Thence N75°04'33"E a distance of 413.94 feet to a point; Thence N57°54'24"E a distance of 260.80 feet to a point on the East line of said Lot 6; Thence N57°54'24"E a distance of 541.82 feet to a point; Thence S87°16'31"W a distance 280.30 feet to a point; Thence S53°24'53"E a distance of 820.39 feet to a point on the East line of said Lot 3; Thence S1°15'08"E a distance of 570.36 feet to the Northeast corner of Lot 4; Thence S0°57'03"E along the East line of Lot 4 a distance of 637.53 feet to a point; Thence S88°51'57"W a distance of

104.41 feet to a point; Thence N82°56'59"W a distance of 158.34 feet to a point; Thence N79°47'18"W a distance of 369.74 feet to a point; Thence N83°12'19"W a distance of 178.28 feet to a point; Thence N88°18'15"W a distance of 290.14 feet to a point; Thence N89°48'50"W a distance of 131.95 feet to a point; Thence S88°16'28"W a distance of 154.71 feet to a point; Thence S84°59'29"W a distance of 31.59 feet to the POINT OF BEGINNING, containing 68.6876 Acres.

REMEDY:

Remediation activities ("Remedy") at the Affected Property included:

1. Closure of the landfill and installation of a clay cap, geosynthetic liner and gas collection system that are substantially equivalent to the requirements under the Resource Conservation and Recovery Act (RCRA). This remedy involved a cover that isolates contaminants from human contact and reduces infiltration or precipitation through the landfill area.

The major components of the remedy involved:

- A. Clearing and grubbing (i.e., digging up roots, stumps, and recycling) fifty acres.
 - B. Reshaping 140,835 cubic yards of waste.
 - C. Importing 43,098 cubic yards of waste fill to maintain surface grading.
 - D. Installing a geotextile gas transmission layer to release landfill gases.
 - E. Filling the perimeter trench with clay soil to provide an 18-inch thick layer over the landfill. This required 12,627 cubic yards for the trench and 235,467 square yards for the layer.
 - F. Placing a geosynthetic liner consisting of 30-millimeter High Density Polyethylene over the clay layer.
 - G. Placing a cover material for the geosynthetic liner consisting of 117,724 cubic yards of soil fill.
 - H. Placing 6 inches of top soil and a vegetative cover over the cover material.
 - I. Installing 6 settlement monuments (survey metal plates) to monitor subsidence throughout the capped area.
2. Installation of a fence and signs along the perimeter of the cap.

ENGINEERING CONTROLS:

The engineering controls at this Site include the landfill cap and its components, the perimeter fence, and the signs along the property boundary.

CONTINUING OPERATION, MAINTENANCE AND MONITORING:

Operation and maintenance activities include maintaining vegetation and slope at the Site in such a condition to prevent erosion of the soil, to maintain cap integrity and stability, and ensure that human health and the environment are being protected.

Activity	Frequency
Seep Sampling - Samples will be taken and analyzed to ensure that no offsite ground water migration from the perched aquifer is occurring.	Every five years, if water is present. Data and description to be included in the five-year review.
Surface Water Sampling - Samples will be taken from the surface water to ensure that no migration of groundwater is occurring.	Every five years, if water is present. Data and description to be included in the five-year review.
Site Inspections - The integrity of the fence, gas vents, and cap will be inspected for signs of vandalism, erosion, degradation, and repair.	Semiannually. Description to be included in the Annual O&M Report and the five-year reviews.
Vegetation Review - Vegetation will be inspected and maintained to ensure that the cap remains stable and repair of the fence as needed to restrict access to unauthorized personnel.	As necessary, based on semiannual Site Inspections and Five-year Reviews. Description to be included in the Annual O&M Report and the five-year reviews.
Deed Review - The deed will be reviewed to ensure that the deed is in place and that the deed is in place.	Semiannually. Status to be reported in the Annual O&M Report and the five-year reviews.
Institutional Controls - The deed files will be checked to ensure that the policies remain in place.	Semiannually. Status to be reported in the Annual O&M Report and the five-year reviews.

LAND USE RESTRICTIONS:

The land use restrictions at the above-described Affected Property are:

- a. No digging on the capped area;
- b. No activities that will cause erosion or disrupt the integrity of the cap or landfill;
- c. No use, for any purpose, of the ground water;
- d. No water wells of any kind drilled within the cap or landfill; and,

- c. No residential use of the Affected Property, defined as having any person present at the Affected Property for more than sixteen (16) hours within one twenty-four (24) hour period.

These land use restrictions apply to the entirety of the Affected Property described herein above.

Changes to the Land Use Restrictions:

May be proposed by submittal of a work plan to the DEQ and EPA to reduce or remove subsurface contaminants. If the DEQ, with written notice to the EPA, approves the work plan and approves completion of the tasks set forth therein, the DEQ, with written notice to the EPA, may file a subsequent Notice on this property designating new land use restrictions or removing the Land Use Restrictions.

Proposals to change the Land Use Restrictions for the Affected Property, and questions regarding this Notice should be addressed to the DEQ Office of the General Counsel, 707 North Robinson, Oklahoma City, Oklahoma; P.O. Box 1677, Oklahoma City, Oklahoma 73101-1677 with written notice to the U.S. EPA Office of Regional Counsel, 1445 Ross Avenue, Suite 1200, Dallas, Texas, 75202-1200.

This Notice and the Land Use Restrictions contained herein run with the land and no change of ownership of the Affected Property will change the Land Use Restrictions described herein above. This Notice and the Land Use Restrictions contained herein are effective upon the date of signature by the Executive Director of the DEQ.

Steven A. Thompson
 Steven A. Thompson, Executive Director
 Oklahoma Department of Environmental Quality

9-25-06
 Date

Subscribed and sworn to before me this 25th day of September, 2006.

Thomas M. Dwyer
 Notary Public
 Oklahoma County, Oklahoma



EASEMENT

I hereby certify that I have the legal right to, and do hereby, create an easement and encumber the real property as described in the foregoing Notice. I hereby voluntarily grant an easement to the DEQ and its employees and agents, for ingress and egress through, across and onto the Affected Property to assure the ongoing placement, operation and protection of the Remedy, Engineering Controls and Land Use Restrictions described herein above.

I have had notice and an opportunity to meet with representatives of the Oklahoma Department of Environmental Quality to comment on the foregoing Notice and agree herewith. I hereby agree to the filing of the foregoing Notice and Easement.

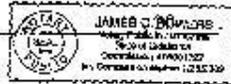
Sandra Rice
Sandra Rice, President
Jim's Inc.

9-8-06
Date

Subscribed and sworn to before me this 8th day of September, 2006.

James C. Williams
Notary Public

My Commission expires:



APPENDIX E – SITE CHRONOLOGY

SITE CHRONOLOGY

Event	Date
Initial discovery of problem or contamination	1980s
Air monitoring is conducted by EPA and Oklahoma Department of Health (OSDH) after repeated complaints were made by local residents and the media.	Early 1983
Final NPL listing	September 1984
Approximately 28 borings are installed to extinguish underground fires.	1983-1984
EPA and OSDH enter into a cooperative agreement to conduct the RI/FS.	July 1984
The Compass Industries Site is formally added to the NPL.	September 1984
The most recent underground fire burns out.	Late 1984
The Remedial Investigation Report is published and the Feasibility Study is completed.	July 1987
The Endangerment Assessment is published.	August 1987
ROD signature	September 29, 1987
EPA issues a Unilateral Administrative Order against seven PRPs	March 1989
The Remedial Design contract is awarded.	August 1988
EPA approves the Final Design.	April 1989
On-site remedial action construction start	January 1990
RA Construction completion	January 1991
EPA accepts the O&M Plan.	August 1991
O&M begins at the site with the collection of seep and background samples.	1991
Final Close-out Report	June 30, 1992
EPA notifies the PRPs of the intent to monitor vents and seeps adjacent to the cap.	October 1993
1993 Annual Monitoring Report, Compass Industries Site.	January 18, 1994
1994 Annual Monitoring Report, Compass Industries Site.	December 30, 1994
The last seep sampling event occurred.	1995
1999 Annual Monitoring Report, Compass Industries Site.	December 30, 1999
The last surface water sampling event occurred.	2000
First Five Year Review	September 26, 2000
2000 Annual Monitoring Report, Compass Industries Site.	December 31, 2000
A Notice of Intent to Delete and a Direct Final Notice of Deletion are published.	November 28, 2001
Second Five Year Review	November 2001
EPA publishes a removal of the deletion and establishes a new comment period.	March 19, 2002
The Notice of Intent to Delete is published.	July 18, 2002

O&M responsibilities shift to the City of Sand Springs. 2002 Annual O&M Report prepared and submitted by the City of Sand Springs.	2002
2003 Annual O&M Report prepared and submitted by the City of Sand Springs.	2003
2004 Annual O&M Report submitted by the City of Sand Springs.	December 31, 2004
2005 Operation and Maintenance Annual Report.	April 21, 2006
Third Five Year Review	April 2006
Explanation of Significant Differences.	August 15, 2006
Deed Notice filed in Tulsa County Registrar's Office for Compass Site	September 2006
2006 Operation and Maintenance Annual Report.	December 31, 2006
EPA letter to City of Sand Springs City Planner, David Harris, regarding Proposed Mining and Mineral Processing Use (SUP-010).	January 12, 2007
EPA Letter to City of Sand Springs City Attorney, David Weatherford, Proposed Mining and Mineral Processing Use (SUP-010).	January 12, 2007
2007 Operation and Maintenance Annual Report.	December 31, 2007
2008 Operation and Maintenance Annual Report.	December 31, 2008
2009 Operation and Maintenance Annual Report.	December 31, 2009
Fourth Five Year Review	September 2010
2010 Operation and Maintenance Annual Report.	December 31, 2010
2011 Operation and Maintenance Annual Report.	December 31, 2011
2012 Operation and Maintenance Annual Report.	December 31, 2012
2013 Operation and Maintenance Annual Report.	December 20, 2013
2014 Operation and Maintenance Annual Report.	December 31, 2014
2015 Operation and Maintenance Plan Updated	July 2015
2015 Operation and Maintenance Annual Report	December 31, 2015