CTEH® Site-Specific Health and Safety Plan

For

Canadian National Railway

Minter City Derailment

March 31, 2015

	Name/Position	Signature	Date Signed
Prepared By:	Wesley Killingsworth, ESPM		03-31-2015
Reviewed By:	Paul Nony, Ph.D.		03-31-2015
Approved By:			

Health & Safety Plan Management of Change

Change 001

Removed references to H_2S & O_2 and added references to benzene and throughout in Sections 1, 5.1, 6.1, & 6.2. Updated Section 4.1.1. Updated Sections 1 & 6.3 to reference benzene.
Added Sections 6.4 & 7.

	Name/Position	Signature	Date Signed
Prepared By:	Wesley Killingsworth		04-01-2015
Approved By:			

Change 002

Description of Change (include sections & page numbers):

	Name/Position	Signature	Date Signed
Prepared By:			
Approved By:			

Change 003

Description of Change (include sections & page numbers):

	Name/Position	Signature	Date Signed
Prepared By:			
Approved By:			

1 SITE INFORMATION

EFFECTIVE DATE: March 31, 2015
INCIDENT NAME: Minter City Derailment
LOCATION: Minter City, MS 33.767238, -90.239509

DESCRIPTION OF SITE: Tasks for the event involve perimeter air monitoring at and around the derailment site. Our primary targeted analytes are benzene, Lower Explosive Limit (LEL), dicyclopentadiene (DCPD) as total Volatile Organic Compounds (VOCs). Per OSHA regulations, each employer on-site is obligated to provide an appropriate safety program for the risks at the site.

2 SITE & EMERGENCY CONTACTS

Emergency Services	Contact Information
CTEH-Toxicology	1-866-869-2834

Project Contacts	Company	Contact Number
JT Wilson – Project Mgr.	CTEH®	501-366-7971
Paul Nony – Tech Dir.; Tox.	CTEH®	501-352-3131

3 SITE CONTROL

3.1 LOCATION OF STAGING AREA

SITE SECURITY AND ACCESS POINTS: East and West directions of Bellchase Rd (550) and Canal Rd

LOCATION OF EXCLUSION ZONE: Derailment Site

LOCATION OF SUPPORT ZONE: East of Canal Rd on Bellchase Rd (550)

3.2 SITE MAP

3.3

3.4 HOSPITAL ROUTE

bing Maps

A **33.75807, -90.243547**

B **1401 River Rd, Greenwood, MS**
Greenwood Leflore Hospital (662) 459-7000

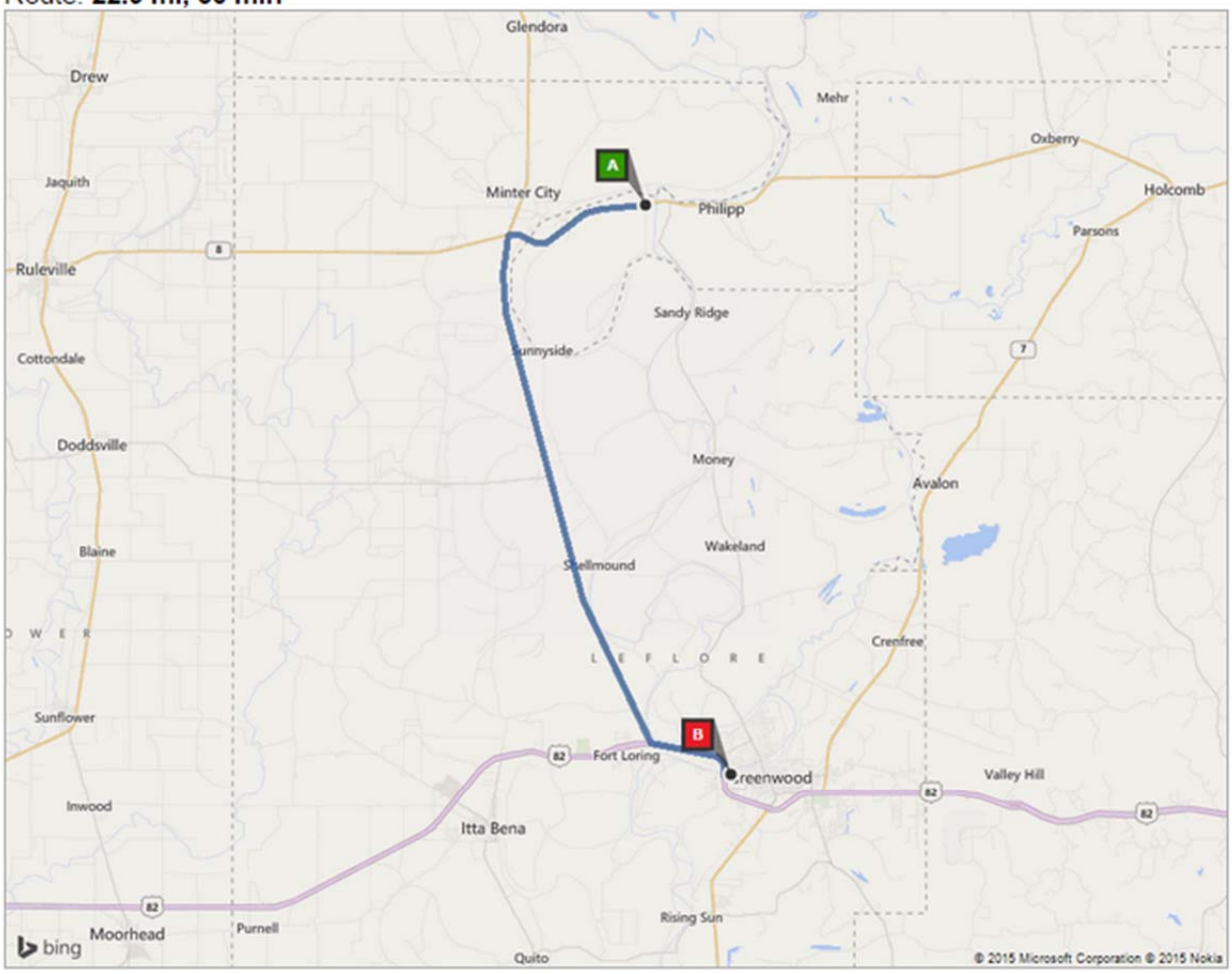
From Minter City, MS to Greenwood Leflore Hospital.

On the go? Use **m.bing.com** to find maps, directions, businesses, and more

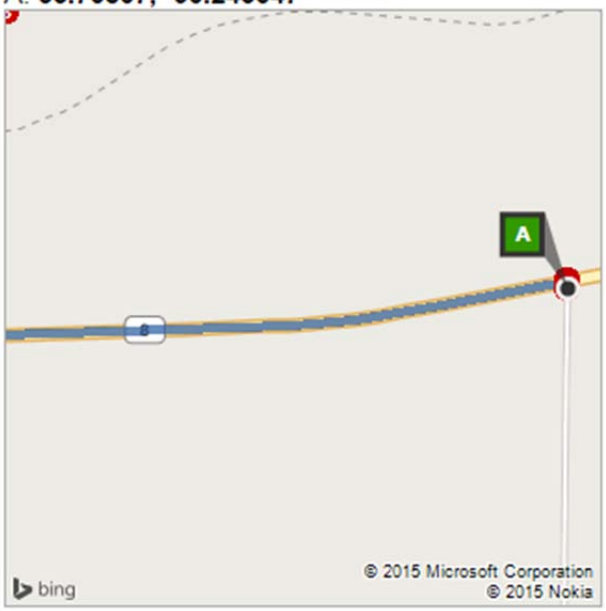
Route: **22.9 mi, 30 min**

A	**33.75807, -90.243547**	**A–B: 22.9 mi** 30 min
	1. Depart **Forty Mile Bend Rd** toward MS-8	43 ft
↰	2. Turn **left** onto **MS-8**	4.3 mi
↰	3. Turn **left** onto **US-49E**	15.6 mi 19 min
↰	4. Turn **left** onto **US-49E S / US-82 E / MS-7 N**	2.7 mi
↰	5. Turn **left** onto **Strong Ave**	0.1 mi
↰	6. Turn **left** onto **River Rd**	0.1 mi
B	7. Arrive at **1401 River Rd, Greenwood, MS** *The last intersection is 9th St* *If you reach Chambers St, you've gone too far*	

Route: **22.9 mi, 30 min**



A: **33.75807, -90.243547**



B: **1401 River Rd, Greenwood, MS**

Document	Organization	Sector	Electronic Filename
HASP	CTEH®	ER	Minter_City_Derailment_HASP_v1.1

4 SITE CHARACTERIZATION

4.1 PHYSICAL HAZARDS

4.1.1 Weather Information & Thermal Stress

Temperatures will be moderate with forecasted chances of precipitation throughout the rest of the week. Currently, the chances for temperature related stress are moderate. Temperatures are to remain 80° F throughout the rest of the week during daylight hours. Drink plenty of water to stay hydrated.

Due to overnight temperatures dropping below 60° F at times along with precipitation, this section outlines reasonable control measures designed to prevent cold stress and hypothermia. Due to the cooler temperatures, cell phone and/or radios should be available and used for communications at all times in case of vehicle trouble, injury, or other circumstances requiring immediate attention.

This section only includes recommendations; therefore, field judgment may be required for circumstances that do not clearly meet the constraints provided herein.

PREVENTION OF COLD STRESS TO BARE HANDS

- For fine work in temperatures below 60.8°F, auxiliary heating units such as warming fans, radiant heaters or contact warm plates should be used.
- Gloves must be worn for sedentary work in temperatures below 60.8°F.

PREVENTION OF TOTAL BODY COLD STRESS

- Based on the forecasted temperatures and the potential presence of wind, workers should use wind-blocking garments, such as Gore-Tex®. Wind blocks may be provided as well.
- In the presence of high humidity, rain, or mist, workers should be equipped with a waterproof outer layer.
- Workers should not be permitted to work in wet environments with non-waterproof outer garments.
- Workers handling evaporative liquids (such as gasoline) should take special precautions not to soak their gloves or clothing. If soaking occurs, the impacted gloves or garments must be replaced immediately.

4.1.2 Moving Vehicles

Be cautious of all motor vehicles on site as well as in the community. As a pedestrian, look 360° before walking to identify any moving vehicles in your nearby vicinity.

4.1.3 Distracted Driving and Driving Safety

CTEH® personnel must abide by CTEH®, client, state and local regulations and guidelines regarding driving while using cell phones. Under no circumstances are CTEH® personnel permitted to text or email while driving. In most cases, CTEH® personnel should pull over, safely away from traffic to conduct cell phone or radio communications.

CTEH® personnel are not permitted to operate a motor vehicle without seatbelts being properly worn. Once you have secured your seatbelt, please adjust your window and driver mirrors. Do not block windows with contents such that your view is obstructed while driving.

4.1.4 Motor Vehicle Hazards

When operating a motor vehicle, look both ways before entering a roadway or crossing intersections. Look for pedestrians on or near roadways. No emailing or texting while operating a motor vehicle.

4.1.5 Heavy Equipment

Track hoes, bulldozers, dump trucks, vacuum trucks, commercial pickup trucks and other heavy machinery may be present at the site during remediation activities. Stay outside of the boom radius of any lever-based heavy machinery.

4.1.6 Electrical

Underground power lines, generators, light plants, and plug-in power sources may create the potential for electrical shock or electrocution. Assess all power equipment and power cords for defects. If any electrical equipment is defective, remove from service.

4.1.7 Fire & Explosion

The nature of the site and existence of an ignition source, fire, variable pressures, and variable unknown sources may create explosion hazards either indoors, outdoors. Containers may explode when heated. CTEH® personnel will don flame resistant clothing (FRCs) when in the work area.

4.1.8 Trip Hazards

Uneven or slick terrain provides an environment in which slips, trips, and falls should be considered. Be aware of your travel path prior to walking or changing directions. Search for any obstructions that may present as a trip hazard.

4.1.9 Noise

Emergency Response work sites are considered non-traditional and often difficult to characterize noise exposures. Please keep hearing protection readily accessible. For work areas experiencing high noise levels (greater than 90 dB) and/or impact noise (greater than 140 dB), please utilize hearing protection.

4.1.10 Eye Protection

The site may include dusty conditions or particulate hazards from other sources. If dusty conditions are present, helmet-mounted goggles should replace safety glasses to further protect your eyes from particulate-induced eye injury.

4.1.11 Water Hazards

Employees working in areas unprotected by passive fall protection systems (OSHA specified railings or nets), where the danger or drowning exists, must wear a U.S. Coast Guard-approved life jacket or buoyant work vest, commonly referred to as a personal floatation device (PFD). However, this regulation can be superseded with the use of 100% fall protection. If an employee cannot fall into the water as a result of use of active or passive fall protection, there is no danger or drowning, and a PFD is not required. For example, where an employee is working on a steep slope and could fall into water, a PFD is required. Safety lines that prevent employees from reaching the water eliminate the danger of drowning, and negate the need for a PFD. The same is true when working on a barge or floating platform with approved railing system.

4.1.12 Working Over or Adjacent to Water.

Bridge workers working over or adjacent to water with a depth of four feet or more, or where the danger of drowning exists, shall be provided and shall use life vests or buoyant work vests in compliance with U.S. Coast Guard requirements in 46 CFR 160.047, 160.052, and 160.053. Life preservers in compliance with U.S. Coast Guard requirements in 46 CFR 160.055 shall also be within ready access. This section shall not apply to bridge workers using personal fall arrest systems or safety nets that comply with this subpart or to bridge workers who are working under the provisions of §214.103(b)(2), (c) or (d) of this subpart.

Prior to each use, all flotation devices shall be inspected for defects that reduce their strength or buoyancy. Defective units shall not be used.

Where life vests are required by the first paragraph of this section, ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.

Where life vests are required, at least one lifesaving skiff, inflatable boat, or equivalent device shall be immediately available. If it is determined by a competent person that environmental conditions, including weather, water speed, and terrain, merit additional protection, the skiff or boat shall be manned.

5 WORK PLAN

5.1 PERSONAL PROTECTION REQUIREMENTS

The following are the defined levels of PPE required. These levels may be modified depending on specific site conditions or job tasks as determined by the Safety Officer.

Level A - Fully encapsulated chemical resistant suit, Air-supplied respirator, inner/ outer gloves, over boots, two-way communications.

Level B - SCBA (or Airline with escape pack), Nomex, Sarnex or Coated Tyvex, Chemical resistant boots, chemical resistant gloves and hard hat.

Level C - Full/half face air purifying respirator, Nomex or Coated Tyvex, Chemical resistant (or safety toe) boots, chemical resistant gloves, eye protection and hard hat.

Level D - Hard Hat, Eye Protection, Foot Protection, Hearing Protection, and FRC. Level D PPE also includes helmet-mounted eye protection goggles.

Table 5.1, on the following page, provides a list of suggested PPE by job task.

Table 5.1 CTEH PPE Matrix – Suggested Personal Protective Equipment

Job Task	Level	Work Zone	Environment	Respirator	CPC	Gloves/Boots
Benzene						
General Air Monitoring	D	Work Area or Community	Conc < 0.5 ppm	None	None	Safety-toed boots
Air Monitoring w/ vapor exposure (moderate conc)	C	Community	Conc > 0.5 ppm but < 25 ppm	Scott AV3000 Full-faced APR w/ P100 OVM	Tychem TF, C3, BR, LV, RC, TK, RF	PVC (< 10)
Air Monitoring w/ vapor exposure (high conc)	B	Work Area	Conc ≥ 25 ppm	SCBA or airline respirator w/ 10min escape	Tychem TF, C3, BR, LV, RC, TK, RF	PVC (< 10)
VOCs						
General Air Monitoring	D	Work Area or Community	Conc < 5 ppm	None	None	Safety-toed boots
Air Monitoring w/ vapor exposure (moderate conc)	Mod. C	Community	Conc > 5 ppm	Scott AV3000 Full-faced APR w/ P100 OVM	None	Safety-toed boots
Air Monitoring w/ vapor exposure (high conc)	Mod. C	Work Area	Conc > 250 ppm	SCBA or airline respirator w/ 10min escape	None	Safety-toed boots

6 RESPIRATORY PROTECTION PLAN

The objective of this Respiratory Protection Plan is to provide guidance for the use of respiratory protection as a means of reducing worker exposure to the chemical hazards associated with the response and remediation efforts. This respiratory protection plan is an addendum to the CTEH® Health and Safety Plan.

Guidance for respiratory protection provided herein is based on the Occupational Safety and Health Administration (OSHA) respiratory protection standard 29 CFR 1910.134. All workers that use respiratory protection in accordance with this plan must meet the minimum requirements outlined in 29 CFR 1910.134, which are but not limited to:

- **Worker must have been trained on how to select respiratory protection.**
- **Worker must have passed an acceptable medical evaluation including a pulmonary function test (PFT).**
- **Workers must have been fit-tested for the respirator (make and model) being used.**
- **Workers must have been trained on proper methods for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise.**

6.1 CHEMICAL HAZARDS REQUIRING RESPIRATOR

The following chemicals were determined to have the greatest potential for human health impacts based on the work activities discussed and known combustion products in air, together with published information regarding health-based worker exposure guidelines. This list will be modified if site conditions indicate the presence of additional chemical hazards.

Table 6 Occupational Exposure Standards and Guidelines for Chemical of Concern

Chemical	OSHA			ACGIH®		Additional
	PEL-TWA (ppm)	PEL-STEL (ppm)	PEL-CEIL (ppm)	TLV-TWA (ppm)	TLV-STEL (ppm)	
Benzene	1	5	25	0.5	**2.5**	A1; confirmed human carcinogen
DCPD	---	---	---	5	**---**	

6.2 RESPIRATORY PROTECTION GUIDELINES

The following respiratory protection guidelines are based on the CTEH® Action Levels for the chemicals of concern. These guidelines are only recommendations and should not be relied upon when site conditions suggest additional protection may be necessary.

Table 6.2 Action Level Based Respiratory Protection Criteria

Respirator Selection Criteria		
Chemical	**Don Full-Faced APR**	**Egress or Don Supplied Air**
Benzene	≥ 0.5 ppm	≥ 25 ppm
Dicyclopentadiene	> 5 ppm	≥ 250 ppm

6.3 REGULATED AREA & CRITICAL OPERATIONS

Based on the potential presence of benzene vapor, and as per 29 CFR 1910.1028, a regulated area will be established for locations where >0.5 ppm benzene vapor is sustained. This regulated area is designated using caution tape and signage. Airborne concentrations of benzene may meet or exceed

0.5 ppm over the course of the work shift, and/or 2.5 ppm for brief periods (i.e 15 min); therefore, respiratory protection must be used for those entering the regulated area. At a minimum, a full-faced APR equipped with cartridges compatible for protection against benzene is required for CTEH® entrants into the regulated area.

For critical operations where there is a potential for elevated acute exposures to benzene (>2.5 ppm for 15 min), engineering or other controls should be used to minimize benzene exposure. Some examples of critical operations include, but are not limited to:

- **Well repair or manipulations**
- **Impacted soil excavation**
- **Product transfer**
- **Environmental sampling**

6.4 CARTRIDGE BREAKTHROUGH SCHEDULES FOR APR

The following respirator breakthrough schedules are based on the wearer of Scott AV3000 full-faced APR with OVM P100 acid gas cartridges. For workers wearing APR other than the Scott AV 3000 full-faced APR, please reference the appropriate manufacturer recommended cartridge change out schedules prior to use. Table 6.4 below lists the recommended Scott AV3000 APR cartridge change out schedule for this project site.

Table 6.4 Cartridge Change Out Schedule

Chemical	Concentration Range (ppm)	Replace Cartridge After:
Benzene	0 – 25	End of Shift
DCPD	0 – 250	End of Shift

As a general rule, cartridges that have been removed from their sealed container and installed onto the APR, regardless of the chemical concentration in air, should be replaced prior to the start of the next shift.

If required, CTEH® will utilize the SCOTT AV3000 Full-faced Air Purifying Respirator in Modified Level D and Level C applications. This APR utilizes the 742 OVM P100 acid gas cartridges. This cartridge is resistant to oils and filters particulates of 0.3 um im diameter with 99.97% efficiency.

For Level B applications, CTEH® will utilize the pressure demand SCOTT AV3000 SCBA pack or pressure demand supplied airline respirator.

7 DECONTAMINATION

General Guidelines: Effective decontamination procedures shall be practiced to ensure the spread of any released material is controlled to minimize the effects to employees, the public, or the environment.

In case of contact with substance, remove and isolate contaminated clothing and shoes and immediately flush skin or eyes with running water for at least 20 minutes. Shower and wash with soap and water.

Decontamination Solutions: The use of soap and water solution will be appropriate in cases of severe contamination. Environmental and Safety personnel will approve cleaning solutions for use on equipment and tolls upon review of the MSDS. All decontamination solution are to be contained and collected for proper disposal.

8 AIR SAMPLING

See CTEH® Air Sampling Work Plan for extensive detail. A brief summary is included herein.

8.1 AMBIENT AIR MONITORING:

CTEH® may perform work area and community monitoring as needed based on site activities and conditions. Monitoring will include real-time evaluation of the chemicals of interest using a combination of analytical methods, colorimetric detector tubes, electrochemical sensors, and photoionization detectors.

8.2 CALIBRATION

Calibration of monitoring equipment will occur at a minimal interval of 1 per 24 hours and recorded on calibration logs. If equipment is suspected of being damaged it will be removed from use until it has been inspected and calibrated.

9 EDUCATION & TRAINING

Personnel are required to be trained in accordance with 29CFR 1910.120 for the level at which they are performing duties.

9.1 FACILITY TO PERFORM MEDICAL TESTING/MONITORING:

If medical monitoring is to be performed, representatives from CTEH® will locate the nearest qualified healthcare facility.

9.2 SITE SPECIFIC TRAINING REQUIRED:

In addition to the training requirements above, the following site specific training topics are to be reviewed prior to work on the site:

☒ Site Hazards (material released, physical hazards, etc.)
☒ Work areas / activities identified
☒ Site Emergency Alerting / Contingency Plan
☒ Evacuation Route / Assembly Areas
☒ Required PPE
☒ Obtaining Medical Treatment / First Aid
☒ Decontamination procedures
☒ Buddy System
☐ Confined Space
☐ Other: _____
☐ Other: _____

9.3 SAFETY BRIEFING/HAZARD COMMUNICATION

Will occur prior to the beginning of each shift and anytime that work conditions change. Site safety briefings will be completed each day and kept on file.

10 SAFETY EQUIPMENT, LOCATION, RESPONSIBILITY

Safety Equipment	Location	Responsibility
First Aid Kit	Incident Command Post	First Aid/CPR trained CTEH personnel may use this kit to administer first aid as necessary.
Fire Extinguisher	Incident Command Post	Fire Extinguisher trained CTEH personnel may use this to extinguish small, manageable fire. Do not attempt to extinguish chemical fires based on compatibility, nor large fires for which the extinguisher is incapable of mitigating. For chemical fires or large fires, contact the fire dept.
Communication	On CTEH® personnel	Two-way radios and cell phones shall be used to maintain constant communication for all CTEH personnel.
Sanitation	Throughout site	Portable latrines or designated restroom facilities should be used accordingly.
Lighting	Throughout site and on CTEH® personnel	Portable light plants should be used to illuminate the work area during dark or night operations. CTEH personnel should also be equipped with flashlights or headlamps during dark or night operations.

11 CONTINGENCY PLANS

In the event of an emergency (at this incident site) the person first noticing the emergency should notify other workers in the immediate area. Evacuation should commence at once if the emergency poses any threat to the safety of the workers. Upon receiving notification of an emergency, the individual in charge of the work area should take appropriate measures to protect human life, the environment (including wildlife) and property.

11.1 ESCAPE ROUTES:

Evacuate cross wind and to upwind locations.

11.2 EVACUATION PROCEDURES:

Evacuate cross-wind to an upwind location.

11.3 ALERTING METHOD:

A single, long air horn blast at the release site will indicate that site conditions are no longer safe and workers should egress as directed in section 10 above. Communication will be through two-way radios and/or cell phones.

12 AMENDMENTS TO SITE SPECIFIC HEALTH & SAFETY PLAN

A. This Site-Specific Health and Safety Plan is based on information available at the time of preparation. Unexpected conditions may arise which necessitate changes to this plan. Unplanned activities and/or changes in the hazard status should initiate a review of major changes in this plan.

B. Changes in the hazard status or unplanned activities are to be submitted on "Amendments to Site-specific Health and Safety Plan" which is included as Page of this plan.

C. Amendment must be approved by the Site Safety Officer prior to implementation of amendment.

   i. All notes and documentation, records must NOT be discarded after their use. Documents are to be submitted to History Person (Finance Section) for record retention.

13 SITE SAFETY PLAN PREPARATION

Prepared by: Wesley Killingsworth

Date: 3-31-2015

Time: 1100 hrs

Wesley Killingsworth

(print)

(signed)

14 SIGN-IN

Name	Signature	Date Signed