SITE MANAGEMENT PLAN

WEST LAKE LANDFILL SUPERFUND SITE OPERABLE UNIT-1

Prepared For:
The United States Environmental Protection Agency Region VII

Prepared on Behalf of:
The West Lake Landfill OU-1 Respondents

Prepared By:

PARSONS

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JULY 2019

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List of Acronyms

ACRONYM	Definition	ACRONYM	Definition
ASAOC	Administrative Settlement Agreement and Order of Consent	PPE	Personal Protective Equipment
CCR	Construction Completion Report	QAPP	Quality Assurance Project Plan
CFR	Code of Federal Regulations	RA	Remedial Action
DIWP	Design Investigation Work Plan	RD	Remedial Design
EPA	U.S. Environmental Protection Agency	RI	Remedial Investigation
FS	Feasibility Study	RIM	Radiologically Impacted Material
GERT	General Employee Radiation Training	ROD	Record of Decision
HAZWOPER	Hazardous Waste Operations and Emergency Response	RWP	Radiation Work Permit
IDW	Investigation-Derived Waste	SMP	Site Management Plan
MDNR	Missouri Department of Natural Resources	SOW	Statement of Work
NCC	Non-Combustible Cover	UAO	Unilateral Administrative Order
OU	Operable Unit	VOC	Volatile Organic Compound

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Introduction

This Site Management Plan (SMP) has been prepared for Operable Unit-1 (OU-1) of the West Lake Landfill Superfund Site (the "site"). The plan describes security provisions and pollution prevention measures that will apply to OU-1 during the implementation of the Remedial Design (RD) / Remedial Action (RA).

This plan has been prepared in accordance with the requirements of the Remedial Design Statement of Work (SOW), Operable Unit-1, West Lake Landfill Superfund Site (EPA 2019b). Specifically, the plan is intended to fulfill the requirements of SOW Paragraph 5.7(c) ["Site Management Plan"]. This SMP is Deliverable 4 on the RD Schedule presented in SOW Paragraph 6.2.

This SMP may be revised as necessary during the RD/RA process to reflect changes in site conditions or RD/RA activities.

The SMP is organized is organized as follows:

- Introduction: This section, which describes the purpose of the plan;
- Site Description: Describes the site location, layout, and history;
- Site Management Roles and Responsibilities: Describes the OU-1 site management roles and responsibilities;
- Site Access: Describes the infrastructure and procedures that will be used to control access to OU-1 during implementation of the RD/RA;
- Site Conditions Monitoring: Describes the procedures that will be used to monitor general site conditions in OU-1 during the implementation of the RD/RA;
- Environmental Monitoring: Describes the procedures that will be used to monitor applicable environmental media in OU-1 during the RD process;
- Pollution Control and Mitigation: Describes the procedures that will be used to control and mitigate environmental impacts to air and stormwater from OU-1 during the implementation of the RD/RA; and
- Secure Waste Management: Describes the procedures that will be used to manage, stage, and/or dispose of generated waste from OU-1 in a secure manner during the implementation of the RD/RA.

Site Description

The West Lake Landfill Superfund Site is an approximately 200-acre inactive solid waste disposal facility, located at the physical address 13570 St. Charles Rock Road in the City of Bridgeton, St. Louis County, Missouri. The site is approximately 18 miles northwest of downtown St. Louis, Missouri, approximately one mile north of the intersection of Interstate 70 and Interstate 270, and approximately one-and-three-quarters (1.75) miles west-northwest of the St. Louis Lambert International Airport. The Missouri River is approximately one-and-a-half (1.5) miles to the west of the site. Industrial properties are located on and adjacent to the site, and commercial and residential properties are located near its perimeter. The site's location is illustrated on **Figure 1**.

The general layout of the site is illustrated on **Figure 2**. The site is divided into three Operable Units. OU-1 is the subject of this SMP and includes areas with radiologically impacted materials (RIM). OU-1 is comprised of the following areas:

- Radiological Area 1 (Area 1): This approximately 17.6-acre area is located in the eastern-to-northeastern portion of the site, immediately southwest of the site's main entrance from St. Charles Rock Road. Area 1 was associated with unregulated landfill operations conducted at the site prior to the commencement of state regulations in 1974. Radionuclides are present in and on the soils and waste materials that have become interspersed within the landfill matrix. The southwestern portion of Area 1 is overlain by 40 to 45 feet of more recent, non-RIM-containing waste materials (referred to as the "muffin top" or "mound"). These materials were placed above-grade between 2002 and 2004 in the North Quarry portion of the Bridgeton Landfill (see below). Due to the disposal of these more recent waste materials, some areas contaminated with RIM occur at depths of up to 85 feet in the southwestern portion of Area 1.
- Radiological Area 2 (Area 2): This approximately 41.8-acre area is located in the northwestern portion of the site. Area 2 was also associated with unregulated landfill operations conducted at the site prior to the commencement of state regulations in 1974. Radionuclides are present in and on soils and waste materials that have become interspersed within the landfill matrix.
- Buffer Zone: This approximately 1.8-acre strip of property is located immediately west-southwest of Area 2. The property was acquired by the landfill operator in 2001 after it was discovered that radiologically-impacted soils had eroded from Area 2 and onto the property.
- Lot 2A2 (Crossroads Properties, LLC): This approximately 3.6-acre privately-owned commercial property is located immediately west-northwest of the Buffer Zone and immediately southwest of the northern portion of Area 2. It has been determined that radiologically-impacted soils have also eroded from Area 2 and onto the Lot 2A2 property.

A Non-Combustible Cover (NCC) was installed over portions of OU-1 Area 1 and Area 2 (as well as the Buffer Zone) in 2016, with additional installation occurring in some steeply-sloped portions of Area 2 in 2018. The NCC installation was performed pursuant to the U.S. Environmental Protection Agency (EPA's) December 9, 2015 Unilateral Administrative Order (UAO) (EPA 2015). The NCC was installed over those portions of OU-1 where RIM was present at or near the ground surface. The cover design consists of a graded 8-in.-thick limestone gravel layer overlaying a non-woven geotextile. The extent of the NCC in Area 1 and Area 2 (including the Buffer Zone) is illustrated on **Figures 3** and **4**, respectively.

OU-2 includes those areas where RIM has not been identified. It is comprised of the following areas: a Closed Demolition Landfill in the northeastern portion of the site; an Inactive Sanitary Landfill in the western portion of the site; and a Former Active Sanitary Landfill, also known as Bridgeton Landfill, in the eastern and southern portion of the site. As noted above, waste materials were placed above-grade in the North Quarry portion of Bridgeton Landfill, over the southwestern portion of what is now OU-1 Area 1. In accordance with the

July 25, 2008 Record of Decision (ROD) for OU-2 (EPA 2008), EPA has deferred oversight of the Closed Demolition Landfill and Former Active Sanitary Landfill to the Missouri Department of Natural Resources (MDNR), while EPA remains the lead regulatory agency overseeing the Inactive Sanitary Landfill.

Sitewide groundwater is being investigated as a separate Operable Unit, OU-3. A Remedial Investigation (RI) and Feasibility Study (FS) for OU-3 will be implemented pursuant to a February 6, 2019 Administrative Settlement Agreement and Order on Consent (ASAOC) (EPA 2019a).

Also included within the boundaries of the site are several structures and facilities that are not part of the waste disposal areas, including a solid waste transfer station, a leachate pre-treatment plant, and an asphalt batch plant.

Note that the security provisions and pollution prevention measures described in this SMP are applicable only to OU-1.

Site Management Roles and Responsibilities

This section describes the OU-1 site management roles and responsibilities.

The individuals designated for each of the following site management roles – as well as their contact information – are specified on **Table 1**.

OU-1 PROJECT COORDINATOR

The OU-1 Project Coordinator has overall responsibility for the implementation of the OU-1 RD/RA. This individual will interface between the EPA and the OU-1 Respondents: Cotter Corporation (N.S.L.) and Bridgeton Landfill, LLC in its own right and as the successor to Rock Road Industries, Inc.

SITE MANAGER

The OU-1 Site Manager has overall responsibility for site management at OU-1. This individual will report to the Project Coordinator and ensure that the procedures described in this SMP are followed. If the Site Manager is not available, one of the Alternates listed on **Table 1** may fulfill their responsibilities.

ENVIRONMENTAL MONITORING MANAGER

The OU-1 Environmental Monitoring Manager has responsibility for environmental monitoring of OU-1. This individual will report to the Site Manager and ensure that the environmental monitoring procedures described in this SMP are followed.

RADIATION SAFETY OFFICER

The OU-1 Radiation Safety Officer has responsibility for OU-1 radiation protection practices. This individual will report to the Site Manager and ensure that radiation protection practices described in this SMP and other approved plans are followed.

Site Access

This section describes the infrastructure and procedures that will be used to control access to OU-1 during implementation of the RD/RA.

The larger West Lake site – except for the borrow area – is enclosed by fencing, and access to the site is controlled by Bridgeton Landfill. Access to OU-1 Area 1, Area 2, and the Buffer Zone is also further controlled. These OU-1 areas are enclosed by chain-link fences that are approximately six feet in height and topped with three strands of barbed wire. Aluminum placards are posted on the fence approximately every 40 feet. These placards depict the standard radiation warning trefoil in magenta on a yellow background, with magenta lettering stating: "CAUTION. CONTROLLED AREA. AUTHORIZED ENTRY ONLY". A sample placard is presented in **Appendix A**.

Area 1 Entrances

The fence line for Area 1 is illustrated on **Figure 3**. The primary foot and vehicle entrance to Area 1 is a 20-ft gate on the southern side of the area's fence line. Signage on the primary entrance gate indicates that there is no entry without proper authorization. There are also three secondary entrances at various locations: a 6-ft gate at the northwest corner; and two 20-ft gates on the north side, accessible from the larger West Lake site's main entrance and parking area. The primary and secondary gates are kept closed and padlocked when not in use.

Area 2 Entrances

The fence line for Area 2 and the Buffer Zone is illustrated on **Figure 4**. The primary foot and vehicle entrance to Area 2 is a 20-ft gate on the southwestern side of the area's fence line. Signage on the primary entrance gate indicates that there is no entry without proper authorization. There are also five secondary entrances at various locations: a 12.5-ft gate near the southwestern corner, accessible from Boenker Lane / Old St. Charles Rock Road; a 20-ft gate at the southwest end of the Buffer Zone, accessible from Boenker Lane / Old St. Charles Rock Road; a 3-ft gate near the northern corner; a 3-ft gate on the northern side, accessible from St. Charles Rock Road; and a 6-ft gate near the northeastern corner. The primary and secondary gates are kept closed and padlocked when not in use.

Entry Procedures

There are presently no ongoing waste disposal activities occurring within OU-1. Workers only enter OU-1 to perform routine inspection and maintenance activities (e.g., inspection of the NCC) or to perform activities that are part of the OU-1 RD/RA.

Only OU-1 workers, or site visitors accompanied by OU-1 workers, are allowed to access Areas 1 and 2 and the Buffer Zone. Site workers that enter OU-1 must complete 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training (including annual 8-hour refreshers) as specified in Title 29 of the Code of Federal Regulations (CFR) 1910.120. Site workers that enter OU-1 must also undergo General Employee Radiation Training (GERT) every two years. Contractors, regulators, consultants, stakeholders, and other visitors can enter OU-1 without completing HAZWOPER and GERT training if they are accompanied by a worker

who has completed the training. Workers who need to enter OU-1 will contact the OU-1 Site Manager prior to entry to coordinate any applicable training and Personal Protective Equipment (PPE).

Entry into Areas 1 and 2 and the Buffer Zone is only allowed in accordance with a Radiation Work Permit (RWP), except for in emergency situations (see below). A RWP is produced for each category of task that workers perform within the boundaries of OU-1. Each RWP specifies the PPE, dosimetry, exposure estimates, and other requirements and information related to the task. RWPs will be prepared for each task in accordance with the procedures specified in the applicable approved Radiation Safety Plan.

Emergency Access

In the event of an emergency, entry into OU-1 may be allowed without the issuance of an RWP. In addition, first responders are expressly permitted to gain access to OU-1 using appropriate measures, such as cutting of gate locks.

Site Conditions Monitoring

This section describes the procedures that will be used to monitor general site conditions in OU-1 during the implementation of the RD/RA.

Site conditions within OU-1 are monitored through two programs: 1) daily inspection from designated visual observation stations; and 2) quarterly and post-rainfall inspection of the NCC installed over portions of Area 1 and Area 2.

Daily Visual Inspections

OU-1 Area 1 and Area 2 are visually inspected by designated personnel on a daily basis, including weekends and holidays. These inspections act as a routine check for anomalous or otherwise notable conditions within the boundaries OU-1. The inspections are performed as a part of the Bridgeton Landfill's daily Perimeter Inspection, as described in the landfill's Operation, Maintenance, and Monitoring Plan (CEC 2019). Visual inspection of OU-1 Area 1 and Area 2 is performed from outside the fence lines enclosing these areas, at designated visual observation stations on local high ground. The locations of these stations for Area 1 and Area 2 are illustrated on **Figure 3** and **Figure 4,** respectively. The Area 1 visual observation station is located south of the area, on the northern portion of the Bridgeton Landfill North Quarry. The Area 2 visual observation station is located south of the area, on the northern portion of the Inactive Sanitary Landfill.

This section is subject to revision as necessary to address comments provided in a May 30, 2019 EPA letter (EPA 2019c).

NCC Inspections

Inspection of the NCC in Area 1, Area 2, and the Buffer Zone is performed on a quarterly basis and following major precipitation events (greater than 1 in. of rainfall over a 24-hour period). The Inspection and Maintenance Plan is presented in the NCC Installation Work Plan (EMSI 2017); an updated version of the plan will be presented in the NCC Construction Completion Report (CCR) that is currently under preparation. In brief, the NCC inspection program examines the condition of the cover, drainage features, and access roads in OU-1. NCC inspections will continue until the RA for OU-1 has been implemented. Full details on the NCC inspection program can be found in the aforementioned plan. A copy of this program is presented in **Appendix B.**

Environmental Monitoring

This section describes the procedures that will be used to monitor applicable environmental media in OU-1 on a regular basis during the RD process. Additional environmental monitoring may be performed on an irregular basis during specific RD activities, such as the Design Investigation. These additional monitoring activities will be defined, executed, and reported within the framework of the RD activities and documents (e.g., the Field Sampling Plan) required in the SOW. These additional monitoring activities are not included in this SMP.

Air

Air monitoring of OU-1 is currently performed in accordance with the Air Monitoring, Sampling, and QA/QC Plan (Auxier 2014). In brief, the currently approved program encompasses 13 air monitoring stations, each of which provides continuous data collection with varying collection/replacement intervals (depending on the constituent) for applicable samplers or media. Monitored constituents include: total alpha and beta activity; isotopic radium, thorium, and uranium; Radon-222 and radon daughters; gamma radiation levels; and volatile organic compounds (VOCs). Monitored constituents, monitoring locations, and monitoring frequencies are subject to revision as approved by EPA. The OU-1 Environmental Monitoring Manager has responsibility for ensuring that the site's Air Monitoring Plan is followed. Full details on the sampling program can be found in this plan.

Stormwater

Stormwater monitoring of OU-1 is currently performed in accordance with the Stormwater Monitoring Quality Assurance Project Plan (QAPP) (Feezor 2018; currently in draft form; latest EPA comments received 6/27/19). In brief, the stormwater monitoring program encompasses 12 stormwater sampling points, which are sampled on a monthly basis and whenever flow is present. Monitored constituents include field parameters; physical and chemical analytes, including select metals and organic compounds; and radiological constituents, including alpha and beta activity and individual radionuclides. The OU-1 Environmental Monitoring Manger has responsibility for ensuring that the stormwater monitoring procedures described in the Stormwater QAPP are followed. Full details on the sampling program can be found in this plan.

Groundwater

Groundwater monitoring of OU-1 will not be conducted as a part of RD activities. Groundwater monitoring is currently being performed at the site as part of routine monitoring of the Bridgeton Landfill, and will also be performed as a part of OU-3. As indicated in Footnote 1 to SOW Paragraph 5.7(f)(1), it is anticipated that a groundwater monitoring program will be developed as a part of the RD and that this program will be used to support evaluation of the OU-1 remedy's performance. It is anticipated that this groundwater monitoring program may eventually be incorporated into the sitewide groundwater monitoring program produced by the OU-3 RI/FS process.

Pollution Control and Mitigation

This section describes the procedures that will be used to control and mitigate environmental impacts to air and stormwater from OU-1 during the implementation of the RD/RA.

Air Impact Control and Mitigation

Currently, the only non-negligible potential source of air impacts from routine OU-1 inspection and maintenance activities is vegetation removal performed in those areas with NCC. As described in the NCC Inspection and Maintenance Plan presented in the NCC Installation Work Plan (EMSI 2017), removal of vegetation from the NCC area is performed semi-annually, if deemed necessary during quarterly NCC inspections. Per the plan, dust generation is to be minimized during vegetation removal. Dust control methods described in the plan include wetting of vegetation prior to mower advancement and wetting of removed woody vegetation prior to grinding and chipping. As noted above, the inspection and maintenance program presented in the NCC Installation Work Plan will be superseded by the revised program presented in the forthcoming NCC CCR.

It is anticipated that RD activities may potentially include vegetation clearing within the boundaries OU-1. In such an event, dust generation from clearing will be minimized using methods that will be presented in the Design Investigation Workplan (DIWP) (Deliverable 8 on the RD Schedule present in SOW Paragraph 6.2) . It is anticipated that that these dust control methods will be similar to those described in the NCC Installation Work Plan (EMSI 2017).

The currently approved air monitoring program for OU-1 provides for continual monitoring of potential environmental impacts to air from OU-1. The program will continue during the performance of RD activities (subject to revisions approved by EPA), in part to demonstrate the effectiveness of air impact control and mitigation procedures.

Depending on the nature and scope of the OU-1 Design Investigation, additional air impact control and mitigation procedures may be necessary during the investigation field activities. It is anticipated that any such procedures, if needed, will be further defined in the DIWP and executed and reported in the subsequent RD deliverables.

Stormwater Impact Control and Mitigation

The NCC was installed in 2016 and 2018 over those portions of OU-1 where RIM was present at or near the ground surface. Although the installation of the NCC was performed to remove vegetation and thereby prevent a surface fire from occurring in areas where RIM was exposed at the ground surface (per the UAO), it also serves to prevent erosion of surface soils via surface flow during storm events. The NCC and associated drainage features accordingly function as the primary stormwater impact controls within OU-1. Full details on the design, installation, inspection, and maintenance of the NCC are presented in the NCC Installation Work Plan (EMSI 2017). As noted above, the inspection and maintenance program presented in the NCC Installation Work Plan will be superseded by the revised program presented in the forthcoming NCC CCR.

The current stormwater program for OU-1 is described in the Stormwater QAPP (Feezor 2018; currently in draft form; latest EPA comments received 6/27/19). This program provides for monitoring of potential environmental impacts to stormwater from OU-1. The program will continue during the performance of RD activities, in part to demonstrate the effectiveness of stormwater impact control and mitigation procedures.

Depending on the nature and scope of the OU-1 Design Investigation, additional stormwater impact control and mitigation procedures may be necessary during investigation field activities. It is anticipated that any such procedures, if needed, will be further defined in the DIWP and executed and reported in subsequent RD deliverables.

Secure Waste Management

This section describes the procedures that will be used to manage, stage, and/or dispose of generated waste from OU-1 in a secure manner during the implementation of the RD/RA.

Currently, the only non-negligible wastes that might be generated by routine OU-1 inspection and maintenance activities are the vegetation cuttings produced by vegetation removal performed in those areas with NCC. As described in the NCC Inspection and Maintenance Plan presented in the NCC Installation Work Plan (EMSI 2017), removal of vegetation from the NCC area is performed semi-annually, if deemed necessary during quarterly NCC inspections. Vegetation cuttings from this semi-annual maintenance are managed as described in the NCC Inspection and Maintenance Plan. In brief, vegetation cuttings are chipped, and the chipped material is placed in a designated area within OU-1 and covered with geotextile and 8 in. of rock.

It is anticipated that two types of waste may be generated during the performance of RD activities within OU-1: vegetation cuttings; and investigation-derived waste (IDW) (e.g, drill cuttings). If the RD includes vegetation clearing as a part of its scope, the cuttings from this clearing will be managed in a secure manner, consistent with the methods described in the NCC Installation Work Plan (EMSI 2017). If the RD includes activities that generate IDW (e.g., cuttings from rotary auger drilling), they will be managed in a secure manner, consistent with methods used in past OU-1 characterization activities (e.g., the Revised Work Plan for Additional Characterization of Extent of RIM in Areas 1 and 2, West Lake Landfill Operable Unit-1 [EMSI 2015]).

Depending on the nature and scope of the OU-1 Design Investigation, additional waste management procedures may be necessary during investigation field activities. It is anticipated that any such procedures, if needed, will be further elucidated in the DIWP (Deliverable 8 on the RD Schedule presented in SOW Paragraph 6.2) and will be executed and reported in subsequent RD deliverables.

References

Auxier, 2014. Air Monitoring, Sampling, and QA/QC Plan, West Lake Superfund Site Operable Unit 1. Prepared by Auxier & Associates, Inc. October 2014.

CEC, 2019. Operation, Maintenance, and Monitoring Plan, Bridgeton Landfill, LLC. Prepared by Civil & Environmental Consultants, Inc. March 2019.

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EPA, 2019c. Letter Re: “Surface Fire Prevention Unilateral Order (UAO)” and “Fifth Revision to the Incident Management Plan with Contingency Plan and Emergency Procedures”. U.S. Environmental Protection Agency, Region 7. May 30, 2019.

Feezor, 2018. Stormwater Monitoring Quality Assurance Program Manual (QAPP), West Lake Landfill Operable Unit 1. Prepared by Feezor Engineering, Inc. May 8, 2018. (Draft; still under review by EPA.)

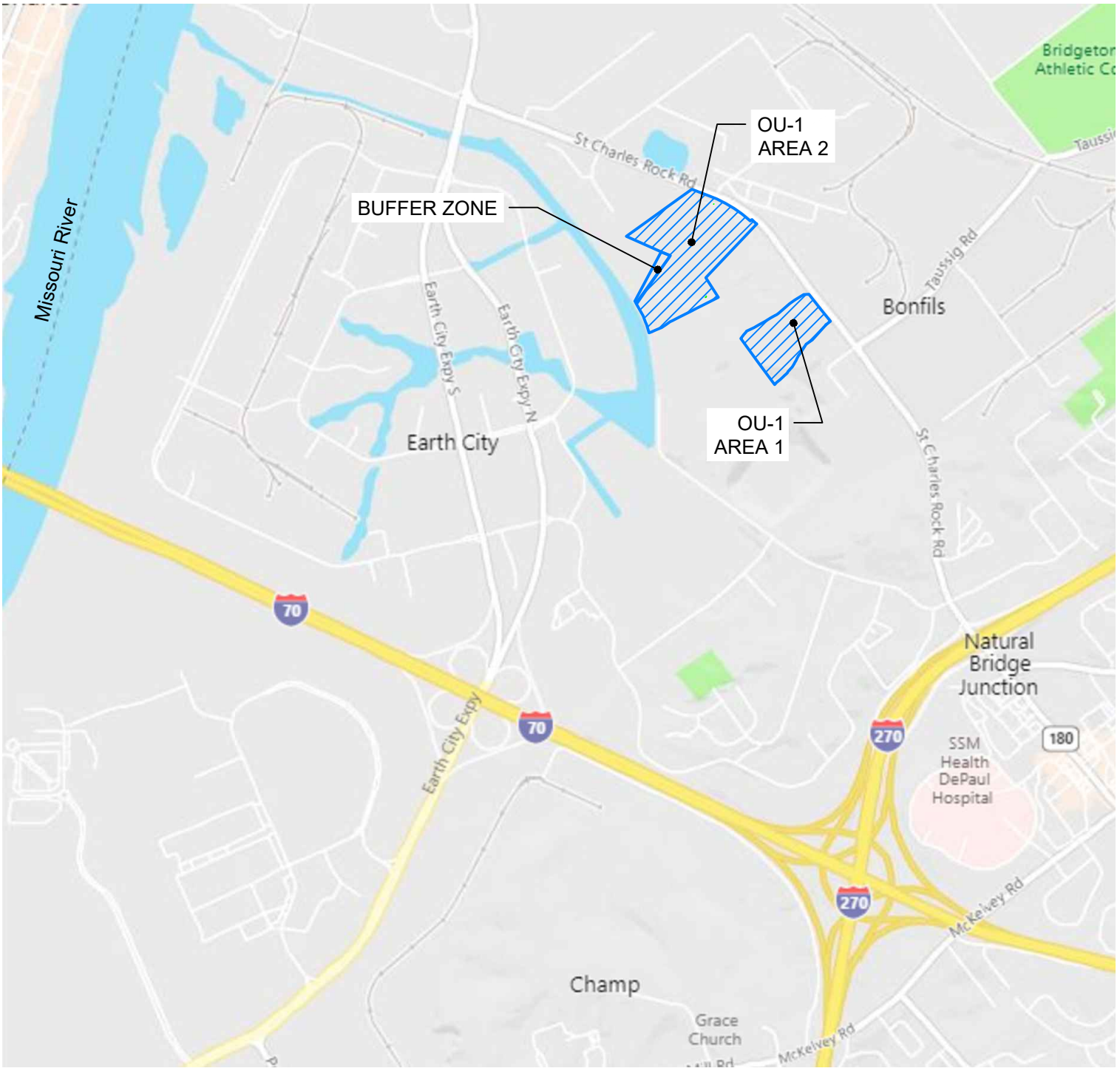
PARSONS

Table

Table 1 - Site Management Roles and Contact Information

SITE MANAGEMENT ROLE	DESIGNATED INDIVIDUAL	AFFILIATION	CONTACT INFORMATION
OU-1 Project Coordinator	Paul Rosasco	Engineering Management Support, Inc.	Cell: 303-808-7227
Site Manager	Daniel Feezor	Feezor Engineering, Inc.	Cell: 217-836-8842
Alternate Site Manager	Bill Abernathy	Feezor Engineering, Inc.	Cell: 314-502-1299
Environmental Monitoring Manager	Jon Wilkinson	Feezor Engineering, Inc.	Cell: 636-578-8635
Radiation Safety Officer	Bill Abernathy	Feezor Engineering, Inc.	Cell: 314-502-1299

Figures



0 2000 4000 Feet

NORTH

NOTE:

1.) BASED ON FIGURES ORIGINALLY PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. AND PRESENTED IN THE MARCH 28, 2019 INCIDENT MANAGEMENT PLAN

PREPARED BY

Engineering for a Better World

FEEZOR ENGINEERING, INC.

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Missouri State Certificate Of Authority #: E-200912211

PROJECT

WEST LAKE LANDFILL
SITE MANAGEMENT PLAN
BRIDGETON, MISSOURI 63044

MAY 2019

DESIGNED BY: IN

APPROVED BY: ---

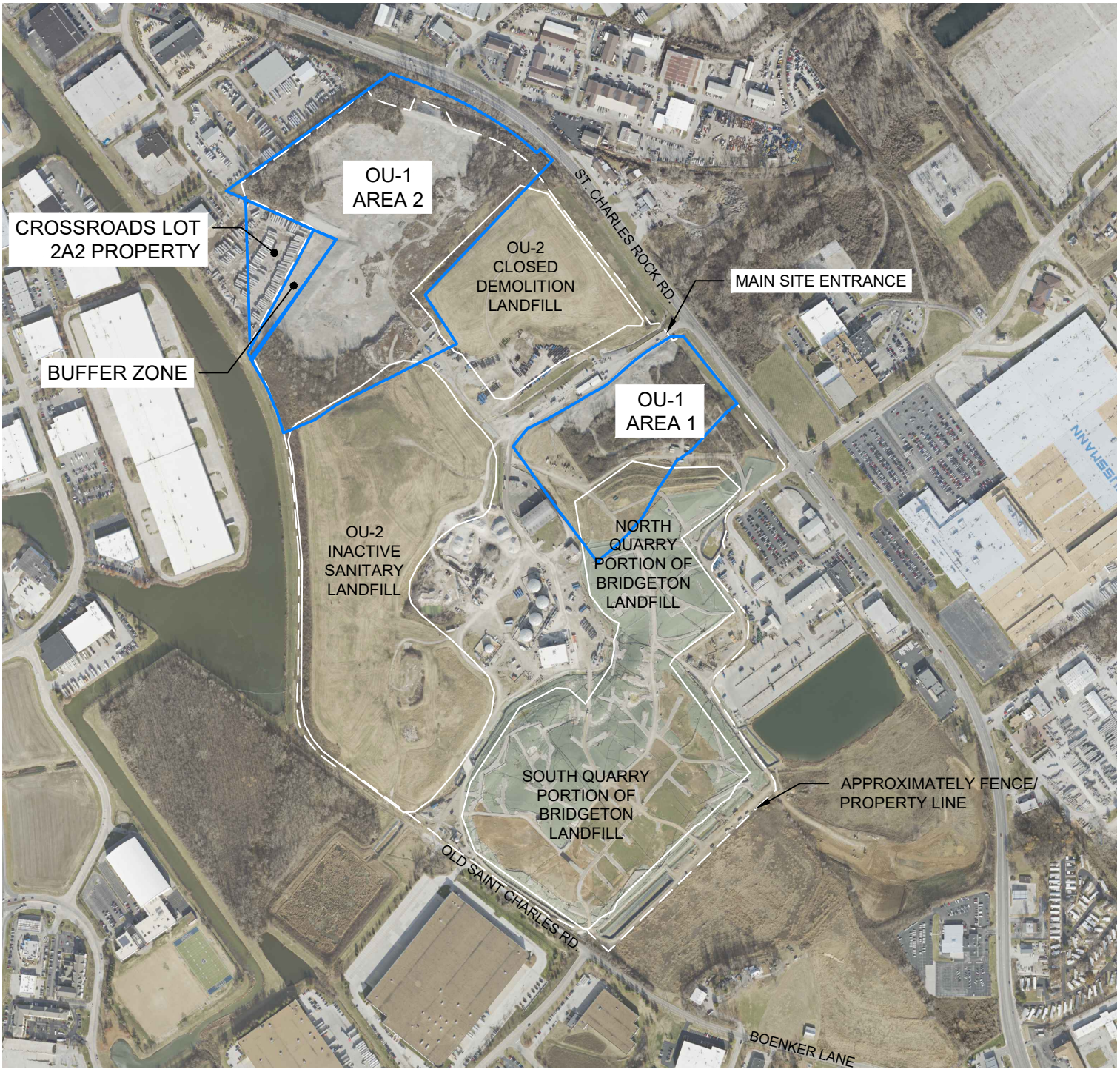
FIGURE 1

DRAWING TITLE

SITE LOCATION

PROJECT NUMBER: BT-191.6

FILE PATH: C:\Users\plins\Dropbox (Feezor Engineering)\Bridgeton\BT-191 (RDWP Design And Management)\BT-191.6 - 02600 - Site Management Plan\figures\BT-191.6-SMP Figures



NOTES:

1.) AERIAL IMAGERY PROVIDED BY COOPER AERIAL SURVEYS, INC. AND IS DATED DECEMBER 12, 2018
2.) BASED ON FIGURES ORIGINALLY PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. AND PRESENTED IN THE MARCH 28, 2019 INCIDENT MANAGEMENT PLAN

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PROJECT
WEST LAKE LANDFILL
SITE MANAGEMENT PLAN
BRIDGETON, MISSOURI 63044

MAY 2019
DESIGNED BY: IN
APPROVED BY: ---

FIGURE 2

DRAWING TITLE

SITE LAYOUT

PROJECT NUMBER: BT-191.6

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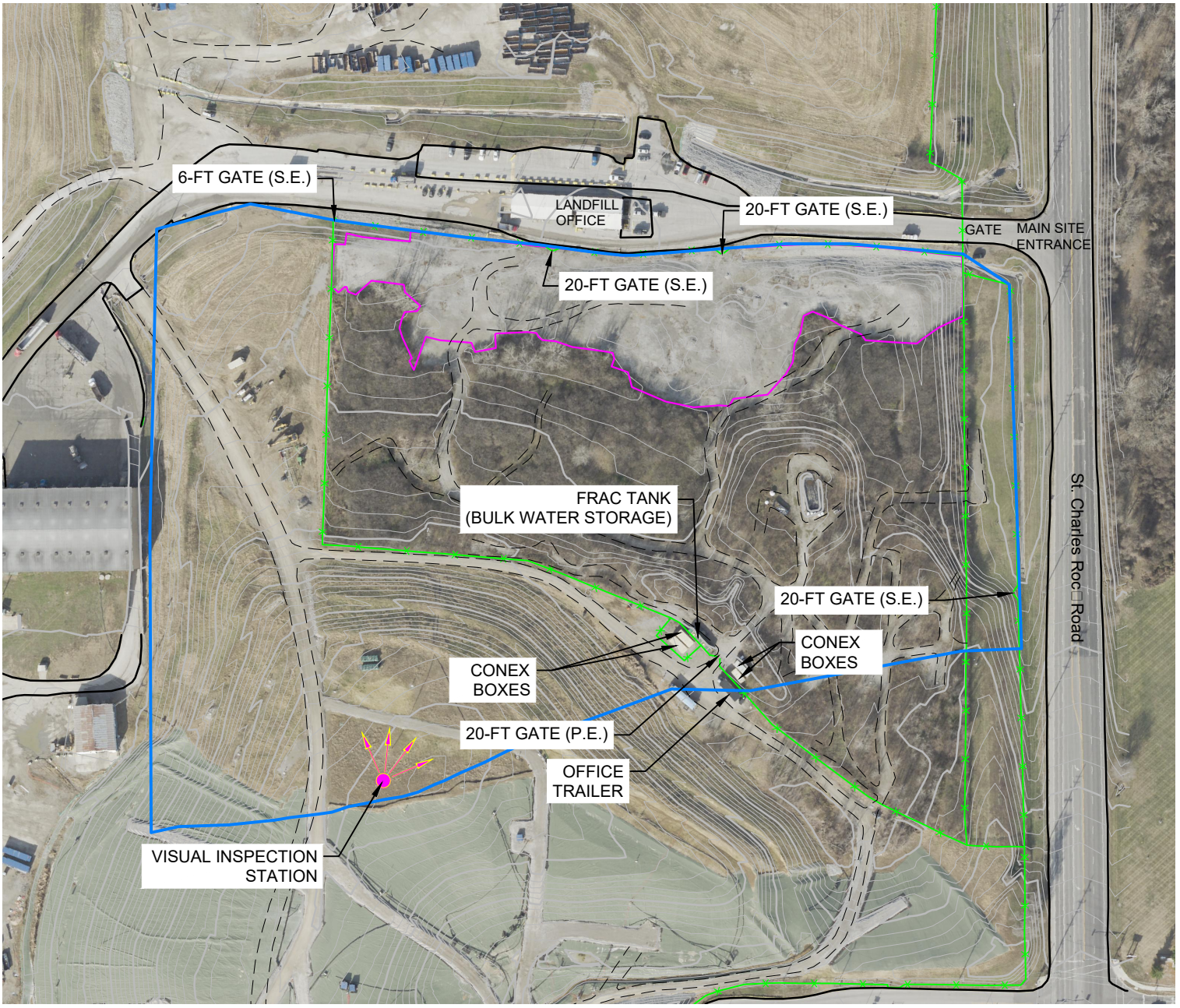

LEGEND

- BASE TOPOGRAPHY (2' CONTOUR)
- BASE TOPOGRAPHY (10' CONTOUR)
- LIMIT OF NON-COMBUSTIBLE COVER
- OU-1 AREA 1
- FENCE
- GRAVEL ROAD
- PAVED ROAD

0 150 300 Feet

NORTH

NOTES:

1) AERIAL TOPOGRAPHY AND IMAGERY PROVIDED BY COOPER AERIAL SURVEYS, INC. AND IS DATED DECEMBER 12, 2018
2) P.E. - PRIMARY ENTRANCE
3) S.E. - SECONDARY ENTRANCE
4) BASED ON FIGURES ORIGINALLY PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. AND PRESENTED IN THE MARCH 28, 2019 INCIDENT MANAGEMENT PLAN

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PROJECT
WEST LAKE LANDFILL
SITE MANAGEMENT PLAN
BRIDGETON, MISSOURI 63044

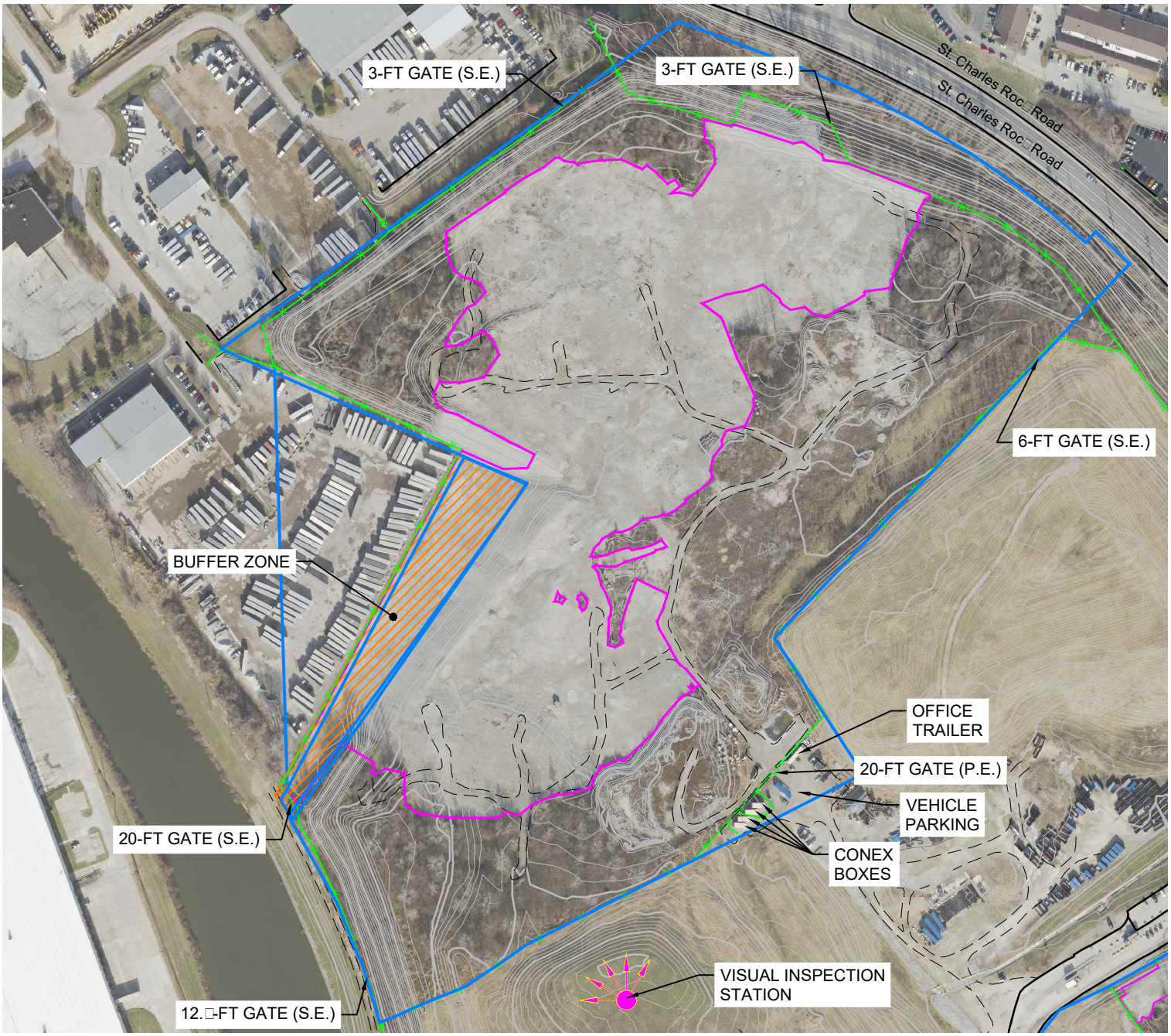
MAY 2019
DESIGNED BY: IN
APPROVED BY: ---

FIGURE 3

DRAWING TITLE

OU-1 AREA 1 FEATURES

PROJECT NUMBER: BT-191.6 | FILE PATH: D:\Dropbox (Feezor Engineering)\Bridgeton\BT-191 (RDWP Design And Management)\BT-191.6 - 02600 - Site Management Plan\figures\BT-191.6-SMP Figures



LEGEND

- BASE TOPOGRAPHY (2' CONTOUR)
- BASE TOPOGRAPHY (10' CONTOUR)
- LIMIT OF NON-COMBUSTIBLE COVER
- OU-1 AREA 2
- FENCE
- GRAVEL ROAD
- PAVED ROAD
- BUFFER ZONE

0 300 600 Feet

NORTH

NOTES:

1) AERIAL TOPOGRAPHY AND IMAGERY PROVIDED BY COOPER AERIAL SURVEYS, INC. AND IS DATED DECEMBER 12, 2018
2) P.E. - PRIMARY ENTRANCE
3) S.E. - SECONDARY ENTRANCE
4) BASED ON FIGURES ORIGINALLY PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. AND PRESENTED IN THE MARCH 28, 2019 INCIDENT MANAGEMENT PLAN

PREPARED BY

Engineering for a Better World
FEEZOR ENGINEERING, INC.
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Missouri State Certificate Of Authority #: E-200912211

PROJECT
WEST LAKE LANDFILL
SITE MANAGEMENT PLAN
BRIDGETON, MISSOURI 63044

MAY 2019
DESIGNED BY: IN
APPROVED BY: ---

FIGURE 4

DRAWING TITLE

OU-1 AREA 2 FEATURES

PROJECT NUMBER: BT-191.6

FILE PATH: D:\Dropbox (Feezor Engineering)\Bridgeton\BT-191 (RDWP Design And Management)\BT-191.6 - 02600 - Site Management Plan\figures\BT-191.6-SMP Figures

Appendix A - Sample OU-1 Fence Line Signage


CAUTION
CONTROLLED AREA
AUTHORIZED ENTRY
ONLY

Appendix B - NCC Inspection and Maintenance Plan

Attachment 2

NCC Inspection and Maintenance Plan

This inspection and maintenance plan applies to the non-combustible cover (NCC) to be constructed over portions of Radiological Areas 1 and 2 at the West Lake Landfill Operable Unit (OU-1) located in Bridgeton, Missouri.

I. GENERAL INFORMATION:

Site Name: West Lake Landfill – Operable Unit (OU-1)
Site Address: 13570 St. Charles Rock Road

II. LOCATION INFORMATION:

Site maps for Areas 1 and 2 are provided as Figures 7 and 8 in the NCC Work Plan. The figures provide topographic contours and the approximate areas of the proposed cover.

III. NON-COMBUSTIBLE COVER DESCRIPTION:

The anticipated cover design consists of the following:

- Non-woven geotextile (10-oz/sy) placed over the ground surface (after vegetation clearing);
- 8-inch (nominal) thickness of 4" minus rock (pit run/road base material) placed over the geotextile; and
- Upper surface of the rock layer to be graded to provide a relatively smooth surface.

IV. INSPECTION AND MAINTENANCE PLAN

Described in this section are the inspection, maintenance, and repair activities to be performed to maintain the integrity and effectiveness of the constructed cover.

Personnel performing inspection, maintenance and repair activities will follow the same health and safety procedures, work procedures and sampling procedures as used for the installation of the Non-Combustible Cover Project as follows:

- Health and Safety Plan for Non-Combustible Cover Installation at West Lake Landfill, Operable Unit 1, Bridgeton, St. Louis County, Missouri dated February 8, 2016

- Radiation Safety Plan for Installation of Non-Combustible Cap, West Lake Landfill's Operable Unit 1, 13570 St. Charles Rock Road, Bridgeton, Missouri, 63044, dated January 4, 2016

- Quality Management Plan dated December 2015

- Surface RIM Identification Sampling and Analysis Plan (SAP), West Lake Superfund Site Operable Unit 1 dated December 2015

Quarterly inspections will be performed on the constructed cover surface by a designee of the OU-1 Respondents until the final remedy for OU-1 has been implemented. After five (5) years, the quarterly inspections may be reduced to annual inspections depending on the conditions and maintenance requirements experienced (i.e., justified with reduced maintenance requirements). The inspections referred to above will also be performed following major precipitation events (with "major precipitation events" defined as greater than 1" of rainfall over a 24-hour period).

Inspection of the cover will be performed to identify areas of erosion, exposed geotextile, depressions, and growth of vegetation (brush, weeds, etc.). Maintenance and repair of the cover will be performed to maintain the thickness of the rock cover material placed on the landfill. The cover will be repaired in areas where rills, gullies, and crevices six (6) inches or deeper have been identified. Areas of cover which are identified as being highly susceptible to erosion will be repaired and/or otherwise protected with erosion control materials. In addition, any holes or depressions which have been created that may lead to surface water ponding will be repaired.

The repair of the cover will include adding rock material as necessary. If the geotextile of the cover is exposed and noted to be deteriorated, it will be replaced.

Removal of excessive amounts of unwanted vegetation (e.g., brush, weeds, trees and other woody growth) on the cover will be performed on a semi-annual basis as identified during the inspections. Removal work will consist of, at a minimum, back-dragging the cover surface. Mowing, clearing, and/or cutting may also be performed as necessary. The surface of the cover is not to be disturbed by any vegetation removal work and precautions are to be taken so that no dust is generated. Handling and management of cleared vegetation is further addressed below.

The surface water control drainage pathways will also be inspected in conjunction with the cover inspections. The frequency of the surface water system inspections may also be reduced to annual after five (5) years, along with the cover inspections, depending on the conditions and maintenance requirements experienced. Any drainage pathways and/or diversion berms that have become eroded will be regraded, and areas that have developed build-up of sediment will be cleaned, to restore proper functioning.

Any major access roads will also be inspected during the cover inspections. The conditions of the road surface and any settlement will be noted. Repairs will be implemented as necessary.

A designee of the OU-1 Respondents will be responsible for performing site inspections and maintaining corresponding records. Record documentation of inspections will be maintained on-site, or at the Bridgeton Landfill, LLC offices, along with a record of any repair actions taken. A summary of the inspection activities follows:

ITEM	FREQUENCY	INSPECTION DESCRIPTION
Cover	Quarterly and following major precipitation events (i.e., > 1" rainfall over 24-hr period)	Erosion Exposed geotextile Settlement/depressions Vegetative growth
Surface Water Controls	Quarterly and following major precipitation events (i.e., > 1" rainfall over 24-hr period	Erosion of drainage pathways and berms Sediment build-up Blockage and settlement of drainage pathways Adequate surface drainage
Access Roads	Quarterly	Condition of road surface Settlement
Vegetation	Semiannually	Cutting or removal of any vegetation that may sprout in the NCC area

V. MANAGEMENT OF REMOVED VEGETATION

Clippings from any cutting or pulling of grass and weeds, as well as any cleared vegetation (including tree trunks up to 12" in diameter) will be chipped and the chipped material will be placed in a designated area. Trees too large to chip will be cut with a chain saw and felled in the immediate area and on the property. Branches from trees will be removed and chipped. Trunks will be cut into lengths no longer than 10 feet and will be safely and neatly stacked in the designated tree trunk storage area.

TABLE 1A
MAINTENANCE PLAN - INSPECTION ACTIVITIES CHECKLIST
WEST LAKE LANDFILL - OPERABLE UNIT (OU-1)
NON-COMBUSTIBLE COVER CONSTRUCTION AREAS

Name of Inspector: _____ Date: _____
Signature: _____ Weather: _____
Company: _____

ITEM	FREQUENCY	INSPECTION DESCRIPTION	STATUS		COMMENTS
			OK	ACTION REQ'D (3)	
Cover	Quarterly and following major precipitation events (1)	Erosion			
		Exposed geotextile			
		Settlement/depressions			
		Vegetative growth			
Surface Water Controls	Quarterly and following major precipitation events (1)	Erosion of drainage pathways and berms			
		Sediment build-up			
		Blockage and settlement of drainage pathways			
		Adequate surface drainage			
Access Roads	Quarterly	Condition of road surface			
		Settlement			
Vegetation Removal	Semi-annually (2)	Vegetation cutting or removal			

NOTES:
(1) Major precipitation events are defined as >1" rainfall over 24-hr period
(2) Removal of vegetation will be performed on a semi-annual basis as identified during the quarterly inspections
(3) If follow-up actions are required, see Table 1B for details

TABLE 1B
MAINTENANCE PLAN - REPAIR CHECKLIST AND RECORD
WEST LAKE LANDFILL - OPERABLE UNIT (OU-1)
NON-COMBUSTIBLE COVER CONSTRUCTION AREAS

Name of Inspector: _____ Date: _____
Signature: _____ Weather: _____
Company: _____

ITEM	REPAIR DESCRIPTION	STATUS		DATE REPAIRED	FURTHER DESCRIPTION / COMMENTS
		OK	ACTION REQ'D		
Repairs to Cover	Maintain thickness of cover				
	Repair where rills, gullies, and crevices (≥6") identified				
	Repair areas highly susceptible to erosion				
	Repair holes or depressions				
	Regrade to promote positive drainage				
	Add rock material as necessary				
	Cover exposed geotextile				
	Replace deteriorated geotextile				
	Other				
Repairs to Surface Water Controls	Regrade eroded drainage pathways and berms				
	Clean areas with sediment build-up				
	Remove blockages				
	Repair depressions and settlement				
	Maintain adequate surface drainage				
	Other				
Repairs to Access Roads	Repair as necessary				
	Other				
Removal of Vegetation	Cut or remove any excessive unwanted vegetation that may sprout in the NCC area (on a semi-annual basis)				
	Other				