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18 January 2024
File No. 0208568-001

Tucson Electric Power Company
Springerville Generating Station
P.O. Box 2222
Springerville, AZ 85938

Attention: Steven Estes
Environmental Superintendent

Subject: 2023 Annual Inspection by a Qualified Professional Engineer
Ash Landfill
Springerville Generating Station
Springerville, Arizona

Dear Mr. Estes:

Enclosed please find the 2024 Annual Inspection Report for the Tucson Electric Power Company (TEP) Ash Landfill located at the Springerville Generating Station (SGS) in Springerville, Arizona.

Haley & Aldrich, Inc. completed a site visit for the inspection of the Ash Landfill on 19 December 2023. This work was performed on behalf of TEP in accordance with the United States Environmental Protection Agency's Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 40 Code of Federal Regulations Part 257, Subpart D, effective 19 October 2015, including subsequent revisions.

The scope of the work was to: i) complete a review of available information on the Ash Landfill; ii) perform a visual inspection of the Ash Landfill; and iii) prepare the enclosed report. Thank you for inviting us to complete this inspection and please feel free to contact us if you wish to discuss the contents of the report.

Sincerely yours,
HALEY & ALDRICH, INC.

Steven F. Putrich, P.E.
Senior Associate – Principal Consultant

Jason Pokorny
CCR Program Manager

Lee Saunders
Project Manager

cc: Mark Nicholls – Haley & Aldrich, TEP Account Manager
Kip Anderson – TEP, Environmental Supervisor
Greg Guimond – TEP, Corporate Environmental Services
Enclosures

HALEY ALDRICH

www.haleyaldrich.com

REPORT ON

2023 ANNUAL INSPECTION BY A QUALIFIED PROFESSIONAL ENGINEER
ASH LANDFILL
SPRINGERVILLE GENERATING STATION
SPRINGERVILLE, ARIZONA

By
Haley & Aldrich, Inc.
Cleveland, OH

For
Tucson Electric Power
Springerville Generating Station
Springerville, Arizona

File No. 0208568-001
January 2024

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1. Description of Project

1.1 INTRODUCTION

1.1.1 Authority

Haley & Aldrich, Inc. (Haley & Aldrich) was contracted by Tucson Electric Power Company (TEP; the Owner) to perform an Annual Inspection of the Ash Landfill (landfill or Unit) located at the TEP Springerville Generating Station (SGS) in Springerville, Arizona. This work was completed in accordance with the United States (U.S.) Environmental Protection Agency's Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities, 40 Code of Federal Regulations Part 257, Subpart D (Rule), effective 19 October 2015, including subsequent revisions, specifically §257.84(b).

1.1.2 Purpose of Work

The purpose of this annual inspection was to observe and evaluate the current condition of the Ash Landfill and to assess that the design, construction, operation, and maintenance of the landfill is consistent with recognized and generally accepted good engineering practice and standards. The visual inspection is intended to identify signs of distress or malfunction of the landfill, should they exist. This report addresses any signs of potential structural weaknesses and conditions that are disrupting (or have the potential to disrupt) the operations and safety of the landfill – that is, any deficiencies in the context of the CCR Rule, specifically §257.84(b)(5) – if identified.

The inspection is divided into three parts: i) a review of available information on the Ash Landfill (provided by TEP); ii) a visual inspection of the Ash Landfill (performed by Haley & Aldrich); and iii) preparation of the enclosed Haley & Aldrich report presenting observations and recommendations for any repairs or corrective measures, as deemed necessary.

1.2 DESCRIPTION OF THE LANDFILL

1.2.1 Location

The Ash Landfill is located at the SGS, approximately 15 miles northeast of Springerville, Arizona off U.S. Highway 191. As shown on **Figure 1**, the landfill is located approximately 3 miles southwest of the four-unit generating facility. A dedicated haul road, referred to as the Ash Haul Road, runs to the north of and parallel with the County Road No. 4265 from the plant to the landfill. The plant and landfill have restricted access, with full-time security and barriers/fences. The general configuration of the landfill is shown in **Figure 2**.

1.2.2 Owner/Operator

The landfill is owned, operated, and maintained by TEP. Additional details are provided below.

	Landfill Owner/Caretaker
Name	Tucson Electric Power Company Springerville Generating Station
Mailing Address	P.O. Box 2222
Town, State, Zip	Springerville, AZ 85938

1.2.3 Purpose of the Landfill

SGS is a four-unit, coal-fired power plant with a maximum generating capacity of approximately 1,600 megawatts. The plant began operations in 1985, and as part of plant operations, the Ash Landfill was opened for disposal of plant-generated CCR, primarily consisting of bottom ash and fly ash, as well as other approved plant wastes.

These lesser quantity plant wastes consist of, but are not limited to, construction debris, cooling tower sludge, cooling tower treated lumber, demineralizer resins, miscellaneous pond clean-outs, power plant outage refuse, retention pond solids, sewage pond and sump sludges, and soda ash and lime, as well as other non-hazardous materials.

1.2.4 Description of the Landfill

The Ash Landfill extends approximately 10,000 feet east to west and 2,000 feet north to south on average and has an approximate footprint of 440 acres, as generally contained within the perimeter access road. The eastern portion of the landfill—now considered inactive—previously reached design capacity and has a 2-foot-thick soil cover. Landfill height in the inactive portion generally ranges from approximately 20 feet in the east to 125 feet at its western edge (in relation to the perimeter road elevation), with benched side slopes. The landfill was expanded in 2015 to its current footprint and actively receives CCR material to the western area daily. Current fill placement is approximately 25 to 50 feet tall in the active area (in relation to the perimeter road elevation).

The landfill was not constructed with a bottom liner system or leachate collection system. Instead, it is Haley & Aldrich's understanding based on client knowledge that approximately 5 to 25 feet of existing grades were excavated to remove any unsuitable materials (e.g., loose rock, debris, topsoil, and organics) until the naturally occurring clay layer was encountered. Subgrades were then recompacted to establish a stable and firm clay subbase.

CCR material is hauled from the plant to the landfill along the Ash Haul Road that ranges from approximately 60 to 70 feet wide. Additional haul roads around the perimeter of the Ash Landfill are approximately 30 to 40 feet wide and are understood to consist of similar construction.

Run-on and run-off control systems, as described in the "Updated Run-on/Run-off Control System Plan" (dated October 2021), are designed, constructed, operated, and maintained to manage peak stormwater discharge resulting from a 24-hour, 100-year storm, using benches, berms, and perimeter channels routed to the Retention Structure No. 3, which is designed to be a non-discharging retention pond, located at the westernmost side of the landfill. It is Haley & Aldrich's understanding that the stormwater management system for the landfill is generally designed to retain stormwater and thereby facilitate evaporation.

A groundwater monitoring network was installed and certified between 2016 and 2017 in accordance with the CCR Rule and currently consists of two upgradient wells and three downgradient wells.

1.2.5 Volume of CCR Contained in the Landfill

The previous annual inspection was conducted by AMTECH Associates, LLC of Scottsdale, Arizona (AMTECH) on 20 December 2022 with its report issued on 18 January 2023. The approximate in-place CCR volume reported—as estimated from annual truck haul logs provided by TEP from 1985 through 2022, and using an assumed unit weight of 48 pounds per cubic foot (0.648 tons per cubic yard)—was approximately 34.1 million tons, or approximately 52.6 million cubic yards.

Based on truck haul logs provided by TEP through 2023, the landfill received approximately 420,000 tons of CCR since the previous inspection. The approximate volume of CCR contained in the Unit at the time of the 2023 inspection is therefore estimated to be 34.5 million tons, or approximately 53.3 million cubic yards.

1.3 REVIEW OF AVAILABLE INFORMATION

1.3.1 Design and Construction Records

It is Haley & Aldrich's understanding that the Ash Landfill began operation in 1985 and was referred to as the Ash Burial Area, consisting of the easternmost portions of the present-day waste boundary. Within the confines of this original boundary—in the south-central region of the inactive portion—a construction debris landfill was permitted, constructed, and operated until about 1995 for solid waste disposal from the construction and operation of the power plant. It had a footprint of approximately 13 acres, a design capacity of approximately 160,000 cubic yards, and was referred to as the SGS Landfill. It was intended to receive materials such as scrap conduit and polyvinyl chloride (PVC) pipe, dry-crushed containers, machine shop trash, scrap wood, construction plastic sheeting, fiberglass insulation scrap, concrete rubble, sacked garbage, and automotive shop wastes. It also contained a small area within the northwest corner for asbestos disposal.

Between 1995 and 1998, the ash burial area was expanded west to what was labeled “Phase 2/3” to approximately the western face of the inactive area through an Arizona Department of Environmental Quality (ADEQ) issued Aquifer Protection Program (APP) permit and included placement of ash over the construction debris landfill as part of its closure plan. Design drawings show the southern slope with benches that are 20 feet wide and 10 feet high, with side slopes of 1.45 horizontal to 1 vertical (1.45H:1V), with a 2-foot-thick soil cover.

Between 2011 and 2015, TEP expanded the Ash Landfill further west to what is referred to as “Phase 5/6” near Retention Structure No. 3. At the time, it was estimated to provide an additional 20 to 30 years of disposal capacity. Design drawings show exterior slopes with benches that are 10 feet wide, 5 feet high, with side slopes of 1.45H:1V and a 2-foot-thick soil cover.

1.3.2 Previous Inspections

Seven-day inspection records performed by qualified TEP staff during 2023 and previous annual inspections by AMTECH were reviewed as part of this annual inspection. Landfill operations were also discussed with TEP personnel during the site inspection on 19 December 2023.

The 2022 Annual Inspection performed by AMTECH on 20 December 2022 did not indicate any "obvious signs of actual or potential structural weakness with the Ash Landfill." Other comments included ongoing "grading operations as needed to address minor erosion in the areas where… cover soil has been applied, perimeter drainage channels, perimeter soil berms, and haul roads." The previous report also indicated irregular bench heights along the western end of the landfill that were recommended to be corrected.

1.3.3 Other Operating Records

The following documents were also reviewed regarding the status and condition of the CCR unit:

- Fugitive Dust Control Plan (October 2015) and Annual Fugitive Dust Control Reports;
- Updated Run-on and Run-off Control System Plan (October 2021);
- Closure Plan (October 2016);
- Post-Closure Plan (October 2016);
- Annual Groundwater Monitoring and Corrective Action Reports;
- Unstable Areas Demonstration (October 2018); and
- Any work orders generated as a result of the inspections.

Any comments and recommendations resulting from these reviews are provided in **Section 3**, below.

2. Inspection

2.1 VISUAL INSPECTION

On 19 December 2023, Haley & Aldrich completed a visual inspection of the Ash Landfill. Weather conditions were overcast and calm, with temperatures ranging from the upper 30s to upper 50s (degrees Fahrenheit). The following sections describe the conditions observed during the inspection, with additional comments provided in the photographs and checklist forms included in **Appendix A** and **Appendix B**, respectively. An associated photo locations plan is shown in **Figure 3**.

2.1.1 General Findings

2.1.1.1 *Active Western CCR Fill Area*

The western portions of the Ash Landfill, encompassing what are referred to as Phases 3 through 5/6, are currently active. Phase 5 was receiving ash materials during the time of the site visit. Haul trucks deposit material in approximately 8-foot-high stockpiles adjacent to one another. After stockpiles have been deposited, the ash materials are spread and tracked in-place into uniform lifts (approximately 5 feet thick) with tracked dozers.

The western portion of the Ash Landfill is relatively flat and uniform, and it drains toward a northern perimeter berm which routes run-off west to Retention Structure No. 3. The surficial material observed within these active phases during the time of inspection appeared to be primarily bottom ash. There was no significant erosion, settlement, or other signs of stress evident within these active phases.

Though significant fugitive dust was not observed during the inspection, TEP personnel noted some issues in controlling dust and wind-blown material across the large, active area during some weather conditions (e.g., high winds). Operational controls have included misting dispenser heads on the water truck nozzles, orange construction fencing and straw bales along the outer edges of ash placement areas, and placement of bottom ash as cover over finer-grained fly ash materials.

The locations of typical conditions and any recommended maintenance areas are shown on **Figure 4** and photographs are provided in **Appendix A**.

2.1.1.2 *Inactive Eastern CCR Fill Area*

The eastern portion of the landfill is inactive and has a soil cover that is approximately 2 feet thick over the ash material, consisting of native material from an on-site borrow source. According to TEP personnel, some areas established vegetation naturally following installation of the soil cover – i.e., vegetation was present within the topsoil placed – while others required supplemental hydroseeding. The soil cover along side slopes and benches was placed with an excavator and compacted using a vibratory plate attachment.

The slopes at the western face of the inactive landfill portions were benched (generally ranging from 10 to 20 feet wide and 10 feet high) and consisted of exposed ash material with no soil cover. Isolated areas with minor sloughing were observed along these relatively flat benches.

There are several isolated incidents of stormwater ponding, including an area along the south side of the top deck that is retained by the crest of the uppermost bench (it appears this may be a runoff holding

area installed as part of the closure of the former construction debris landfill area). Stormwater flow also appears to be captured at a low point in a vehicle turnaround area to the east. More generally across the inactive area, ponding was present on the benches along the southern side of the landfill (by design). TEP personnel indicated recent enhancements were implemented along these benches to help reduce erosion and washouts from stormwater runoff. Improvements included the installation of an elevated lip along the outer edge of the bench and confining berms placed perpendicularly across the bench, spaced roughly 150 feet apart.

Animal burrows and small holes were observed along the outer edges of the southern benches, with small washouts beginning to form in select areas. Relatively shallow erosion rills were observed along outer slopes, except at the southwestern corner, where deeper erosion rills were documented and ash material was exposed, as well as an area along the south-central side that had a deeper washout.

Woody vegetation, primarily salt cedar (noted as an invasive species by the U.S. Department of Agriculture), was present along the top deck, as well as the southern benches and slopes and was observed to range up to 6 feet in height.

Overall, little to no erosion rills were observed along the eastern and northern slopes of the landfill, which were noted to consist of shorter and more uniform slopes with denser vegetation. No signs of major slope instability or stress (e.g., misalignments, depressions, or bulging) were observed along any portion of the top deck or side slopes of the landfill.

The locations of recommended maintenance areas are shown on **Figure 4** and photographs are provided in **Appendix A**.

2.1.1.3 *Roads*

Haul roads and temporary access roads are utilized to transport material to the active western portion of the landfill. At the time of the inspection, the Ash Haul Road appeared to be in good condition, as well as the perimeter and top deck access roads. Fugitive dust along the roads was not observed to be an issue. Water bars along a section of the northwest perimeter road were installed to redirect stormwater runoff from the raised surface of the perimeter road down to the flat, active ash fill area. Typical conditions are documented in photographs provided in **Appendix A**.

2.1.1.4 *Groundwater Monitoring Wells*

Existing groundwater monitoring wells were observed to be easily accessible, clearly labeled, protected from inadvertent damage with jersey barriers, and in overall good condition.

2.1.1.5 *Stormwater Controls*

During the site inspection, northern drainage channels were actively being cleared of sediment buildup (noted primarily as wind-blown ash materials) to restore capacity for stormwater run-on from the region to the north of the landfill.

A drainage channel along the southern side of the inactive ash fill area appears to have incised from erosion, creating an irregular width and depth throughout. This southern channel discharges to a south retention area, located to the north of the water truck refill station. A small, constant stream of water was observed to flow from the station into this retention area. TEP personnel noted that the valve on the refill station was left incrementally open to minimize the potential for freezing during winter months.

Overall, channels and diversion berms appeared to be in good condition. The locations of recommended maintenance areas are shown on **Figure 4** and photographs are provided in **Appendix A**.

2.2 CARETAKER INTERVIEW

Haley & Aldrich spoke with TEP Environmental Coordinators on 18 December 2023 and during the site visit 19 December 2023, regarding the background, operations, and maintenance of the Ash Landfill. Information provided by TEP personnel has been incorporated into this report.

2.3 OPERATIONS AND MAINTENANCE PROCEDURES

The landfill is operated and maintained by TEP personnel. Operations and maintenance activities include ash hauling and placement, soil cover placement and repairs, cleanout and regrading of drainage channels as needed, fugitive dust control (with water trucks and other methods described herein and in the Fugitive Dust Control Plan), and weekly inspections.

TEP personnel monitor and inspect the landfill at least once every seven days and maintain inspection results in the operating record as required by the CCR Rule. These weekly inspections include a visual inspection and review of:

- Run-on and run-off controls (including ditches and erosion and sediment controls);
- Water retention structures (e.g., Retention Structure No. 3);
- Fugitive dust concerns along haul roads and within the landfill footprint;
- Structural stability of the ash landfill; and
- Any work orders generated as a result of the inspections.

Haley & Aldrich reviewed weekly inspection records for 2023 as part of the annual inspection, which noted all items as meeting expectations (i.e., no need for improvement) and no work orders were generated as a result of the inspections.

2.4 OVERALL LANDFILL CONDITION

Overall, the landfill was observed to be stable and broadly consistent with recognized and generally accepted good engineering standards. No sinkholes or evidence of settlement were observed. Only a few isolated areas of potential sloughing were noted along the exposed western slopes of the inactive portion. Areas of ponding and erosion were observed at locations along the south and southwestern benches of the landfill, as noted in **Section 2.1.1.2** and shown in **Figure 4**.

No changes in overall landfill geometry were noted since the previous annual inspection, except through normal and planned disposal operations (i.e., ash placement in the western active fill area, as previously discussed). No other changes were observed that may have affected the stability or operation of the Ash Landfill as designed and constructed.

Visual inspection of the existing conditions of the landfill did not indicate any actual or potential structural weakness of the landfill, or any actual or potential disruptions to normal operations and safety of the Ash Landfill.

3. Assessments and Recommendations

3.1 ASSESSMENTS

Based on our visual observations, the following items have the potential to create structural weakness and/or other landfill performance concerns in the future, which could affect the operation and safety of the landfill if left unaddressed:

- Large active fill area requiring increased efforts to control fugitive dust and stormwater runoff;
- Steep side slopes with localized sloughing that could continue to progress and cause larger mass mobilization;
- Ponding on benches and other areas noted along toe of slope that could cause weakening of in-situ materials, piping along preferential pathways, and potentially leading to leachate generation;
- Erosion rills down the landfill side slopes and deep gullies along the south-central slope and southwestern corner of the inactive eastern fill area;
- Erosion of south drainage channel along the toe of the landfill slope;
- Animal burrows and other small holes along elevated lip of southern benches that could lead to increased erosion and washouts; and
- Tall, woody, and invasive vegetation scattered around the top deck and downhill slopes of the landfill, which can cause several issues if not adequately managed, such as:
  - displacement of native species,
  - dislodging of cover soils and potential damage to final cover systems if blown over,
  - preferential pathways for stormwater infiltration (leading to increased potential for piping and washouts, as well as increased leachate generation), and
  - a hindered or obscured view of the landfill surface for ongoing monitoring and maintenance activities.

No evidence of deficiencies, as referenced in §257.84(b)(5), or evidence of immediate or impending threats to landfill integrity were observed at the time of the inspection.

3.2 RECOMMENDATIONS

Although no deficiencies were identified, we recommend the following measures be undertaken to address the items listed in **Section 3.1** in support of on-going maintenance and operational activities:

- Re-evaluate landfill operations for potential improvements associated with the ongoing ash placement activities and long-term closure planning, with considerations such as, but not limited to:
  - reduced active footprint with exposed ash materials,
  - modified side slopes and benching configuration for increased stability of interim and future final cover systems, and
  - reduced potential for stormwater ponding within the landfill waste boundary.

- Monitor erosion of the southern and southwestern slopes and implement repairs of rills and gullies that exceed 12 inches in depth.
- Monitor the north and south drainage channels for excessive erosion and/or sedimentation, and repair and regrade to the original design.
- Monitor animal burrows and backfill, as needed, to prevent development of future erosion and/or stability issues.
- Monitor growth of tall, woody, and invasive vegetation and remove by hand-cutting and/or use of light equipment.

It is also recommended that the TEP Ash Landfill Weekly Inspection be regularly (e.g., every two to three years) reviewed and reassessed for efficacy and regulatory compliance.

4. Certification

The assessment of the general condition of the Ash Landfill is based upon available data and visual observation as described herein. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of this report.

In reviewing this report, it should be recognized that the described condition of the landfill is based on visual observations of field conditions at the time of inspection, along with other data made available by TEP to the inspection team. It is important to note that the condition of a landfill depends on numerous and constantly changing internal and external conditions and is evolutionary in nature. It would be incorrect to assume that the present condition of the landfill will continue to represent the condition of the landfill at some point in the future.

In my professional opinion and based on the information presented in this report, the physical condition and ongoing operations and maintenance of the Ash Landfill at the TEP SGS is consistent with recognized and generally accepted good engineering standards and practice.

Signed: _____
Consulting Engineer

Print Name: Steven F. Putrich
Arizona License No.: 60715
Title: Senior Associate
Company: Haley & Aldrich, Inc.

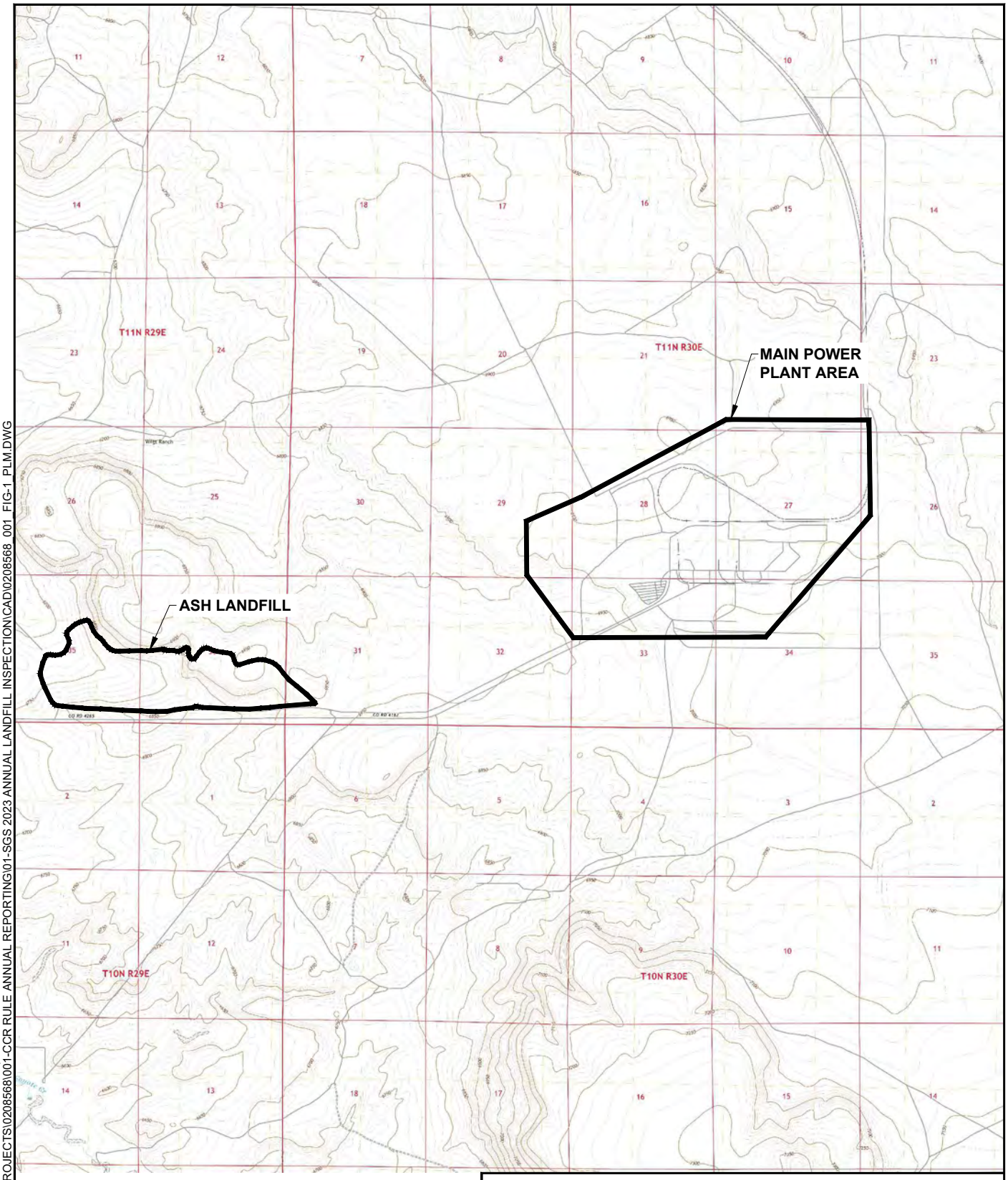
Professional Engineer's Seal and date:

Steven F. Putrich
Digitally signed by Steven F. Putrich
Date: 2024.01.18 11:36:08 -05'00'

EXPIRES 12/31/2024

HALEY ALDRICH

FIGURES



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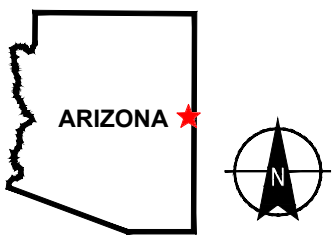
ARIZONA - APACHE COUNTY
7.5-MINUTE SERIES, 2021



HALEY ALDRICH

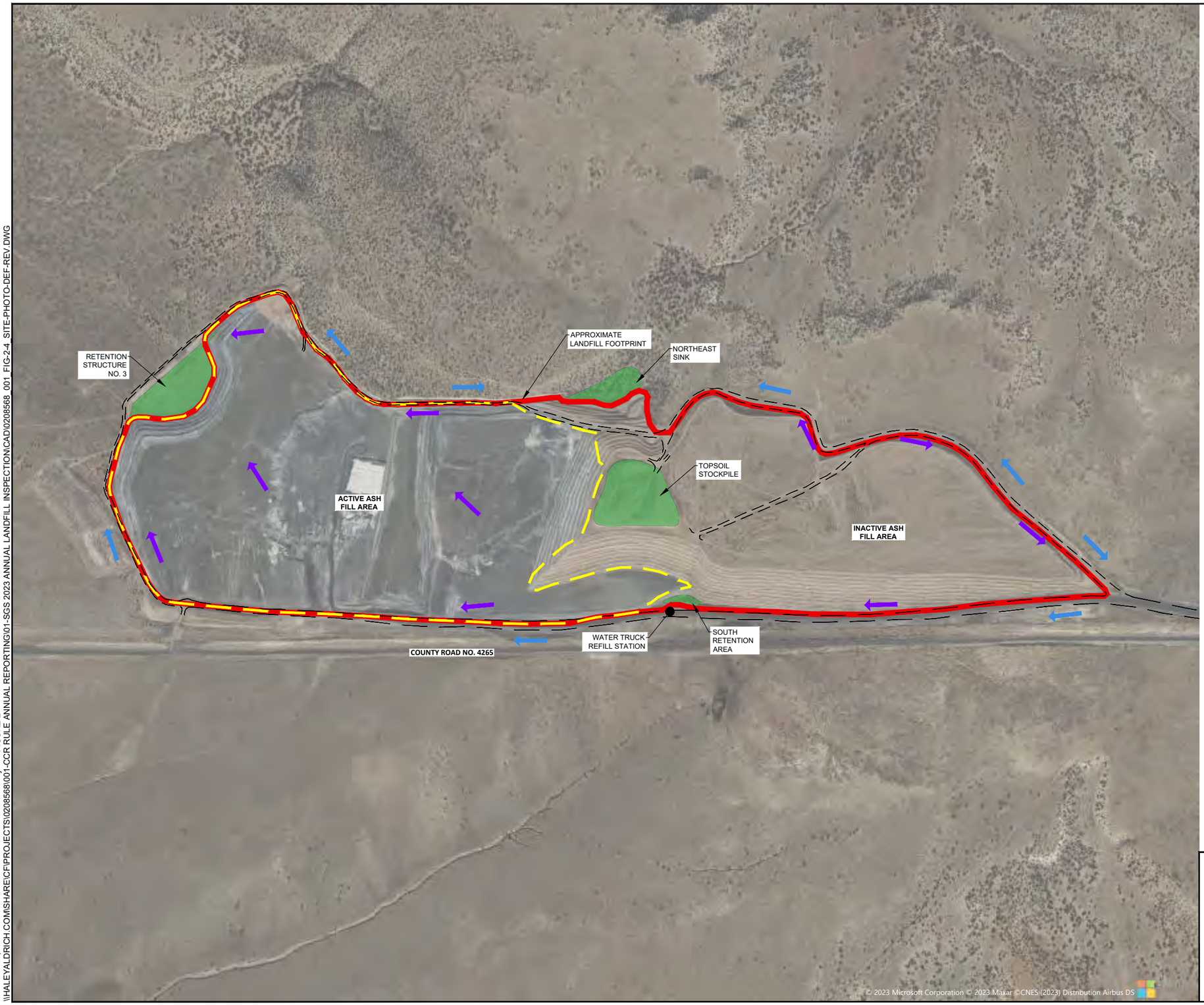
2023 ANNUAL INSPECTION - ASH LANDFILL
TUCSON ELECTRIC POWER
SPRINGERVILLE GENERATING STATION
SPRINGERVILLE, ARIZONA

PROJECT LOCATION MAP

APPROXIMATE SCALE: 1" = 5000'
JANUARY 2024

FIGURE 1

YEOMAN, ROB Printed: 1/11/2024 1:30 PM Layout: FIGURE 1
\\HALEYALDRICH.COM\SHARE\CF\PROJECTS\0208568\001-CCR RULE ANNUAL REPORTING\01-SGS 2023 ANNUAL LANDFILL INSPECTION\CAD\0208568 001 FIG-1 PLM.DWG



LEGEND

- LANDFILL BOUNDARY
- ACTIVE FILL AREA
- LANDFILL / PERIMETER ROADS
- ASH HAUL ROAD
- MISCELLANEOUS SITE FEATURE
- RUN-ON STORMWATER FLOW DIRECTION
- RUN-OFF STORMWATER FLOW DIRECTION

NOTES

1. AERIAL PHOTOGRAPH FROM MICROSOFT BING MAPS DATED 2023.
2. FIELD INSPECTION PERFORMED BY HALEY & ALDRICH PERSONNEL ON 19 DECEMBER 2023.
3. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

N

0 1000 2000
SCALE IN FEET

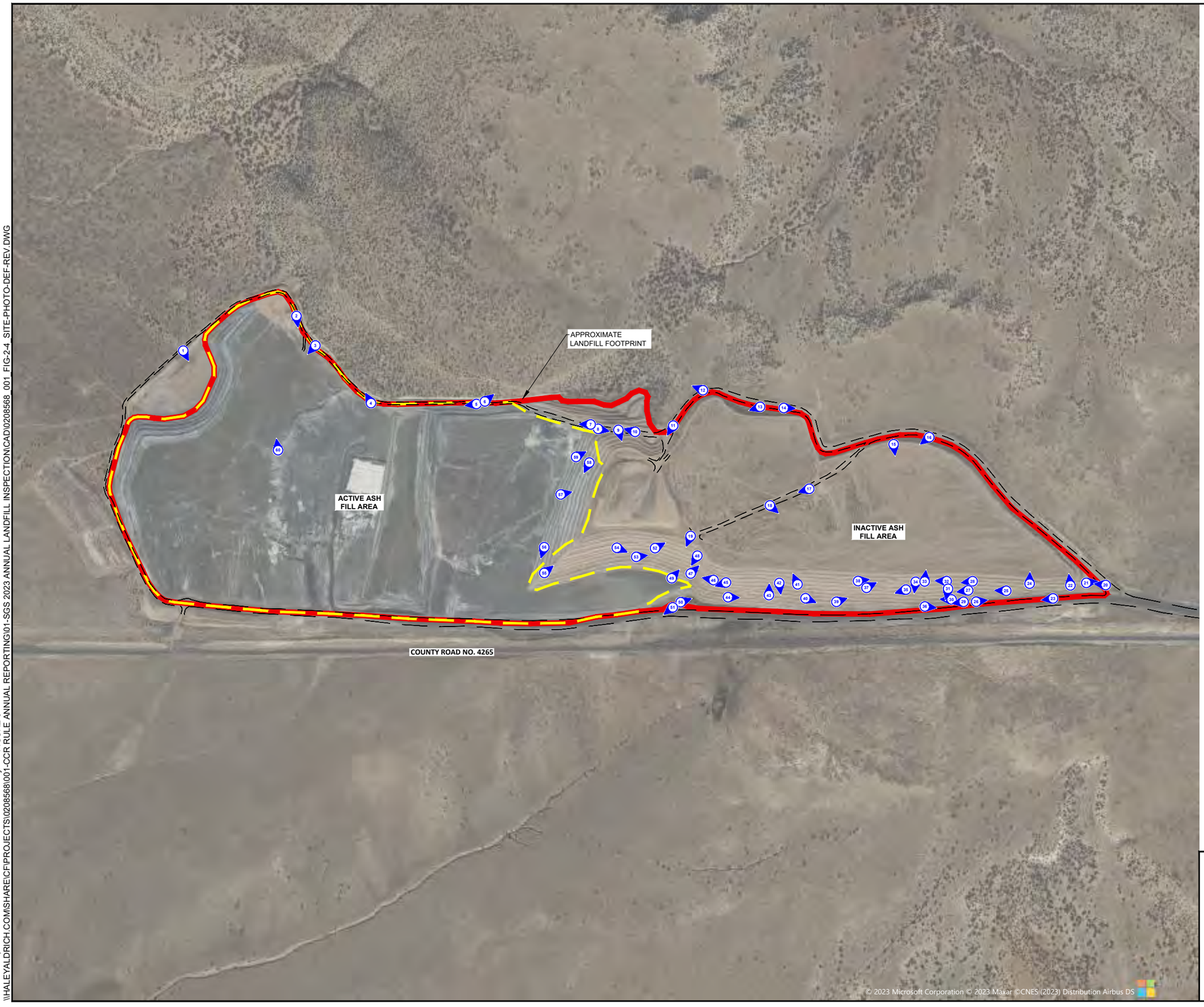
HALEY ALDRICH

2023 ANNUAL INSPECTION - ASH LANDFILL
TUCSON ELECTRIC POWER
SPRINGERVILLE GENERATING STATION
SPRINGERVILLE, ARIZONA

SITE MAP

SCALE: AS SHOWN
JANUARY 2024

FIGURE 2



LEGEND

- LANDFILL BOUNDARY
- ACTIVE FILL AREA
- NO — PHOTO LOCATION/DIRECTION
- LANDFILL / PERIMETER ROADS
- ASH HAUL ROAD

NOTES

1. AERIAL PHOTOGRAPH FROM MICROSOFT BING MAPS DATED 2023.
2. FIELD INSPECTION PERFORMED BY HALEY & ALDRICH PERSONNEL ON 19 DECEMBER 2023.
3. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

N

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SCALE IN FEET

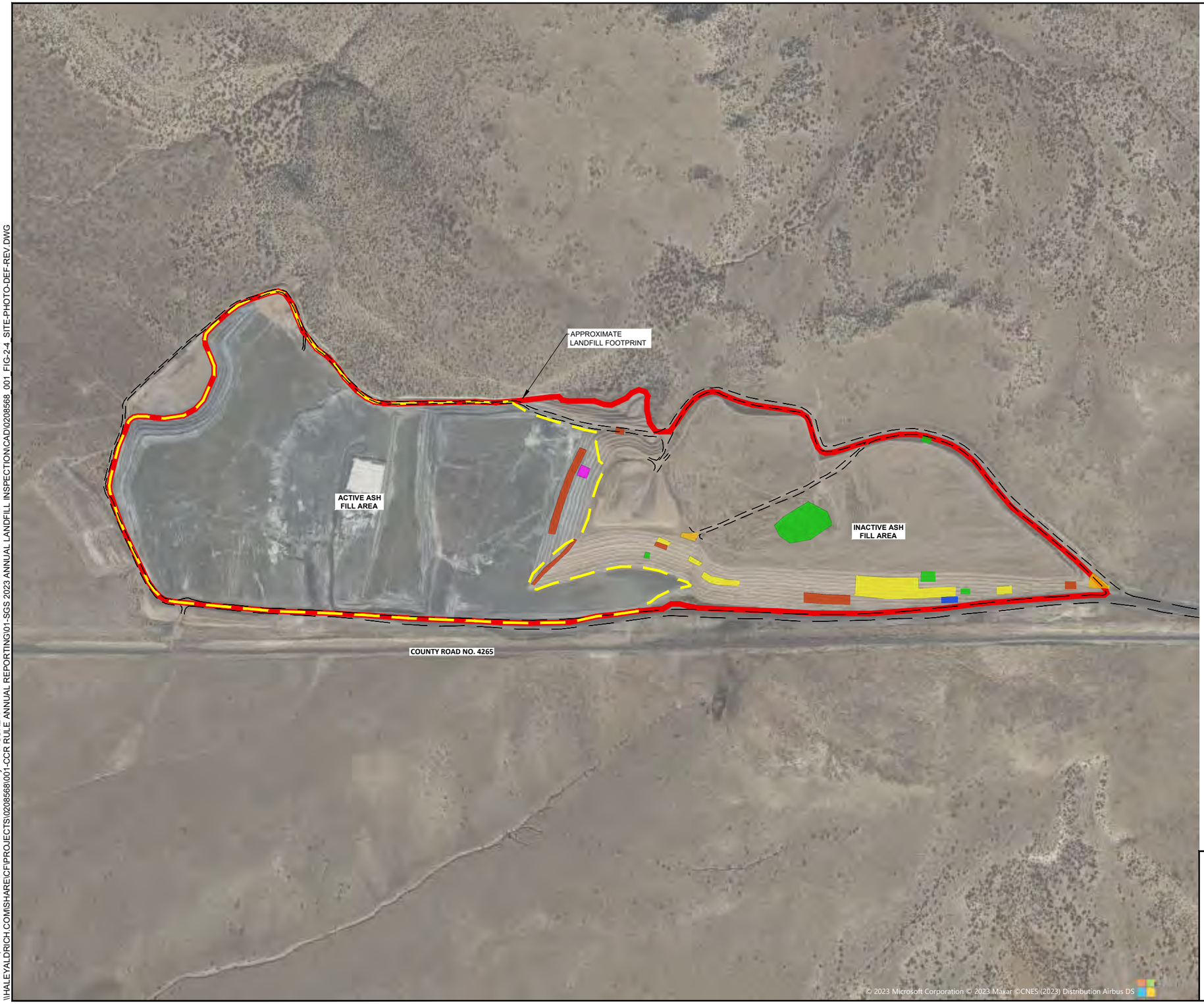
HALEY ALDRICH

2023 ANNUAL INSPECTION - ASH LANDFILL
TUCSON ELECTRIC POWER
SPRINGERVILLE GENERATING STATION
SPRINGERVILLE, ARIZONA

PHOTO LOCATION MAP

SCALE: AS SHOWN
JANUARY 2024

FIGURE 3



LEGEND

- LANDFILL BOUNDARY
- EXTENTS OF ASH
- AREAS OF DEEP EROSION ON ASH AND IN INTERIM COVER
- AREAS OF EXPOSED ASH
- POTENTIAL PONDING AREA
- POTENTIAL SLOUGH AND CRACKING
- WOODY VEGETATION PRESENT
- ANIMAL BURROWS PRESENT
- LANDFILL / PERIMETER ROADS
- ASH HAUL ROAD

NOTES

1. AERIAL PHOTOGRAPH FROM MICROSOFT BING MAPS DATED 2023.
2. FIELD INSPECTION PERFORMED BY HALEY & ALDRICH PERSONNEL ON 19 DECEMBER 2023.
3. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
4. MINOR EROSION RILLS ARE PRESENT ON MAJORITY OF SOUTHERN SIDE SLOPES OF INACTIVE FILL AREA; ONLY DEEPER EVIDENCES HIGHLIGHTED.
5. PONDING AREAS ARE PRESENT ON MAJORITY OF SOUTHERN BENCHES OF INACTIVE FILL AREA AND THEREFORE LEFT UNHIGHLIGHTED.

N

0 1000 2000

SCALE IN FEET

HALEY ALDRICH

2023 ANNUAL INSPECTION - ASH LANDFILL
TUCSON ELECTRIC POWER
SPRINGERVILLE GENERATING STATION
SPRINGERVILLE, ARIZONA

RECOMMENDED MAINTENANCE AREAS

SCALE: AS SHOWN
JANUARY 2024

FIGURE 4

SAUNDERS, LEE
\\HALEYALDRICH.COM\SHARE\CF\PROJECTS\0208568\001-CCR RULE ANNUAL REPORTING\01-SGS 2023 ANNUAL LANDFILL INSPECTION\CAD\0208568_001_FIG-2-4_SITE-PHOTO-DEF-REV.DWG
Printed: 1/17/2024 4:55 PM Layout: FIGURE 4

APPENDIX A
Photo Log

Photo 1
Retention Structure No. 3 and spillway

Photo 2
Condition of Groundwater Monitoring Well, CCR-2U

Photo 3
CCR material stockpiles deposited in Active Fill Area

Photo 4
Erosion and sediment controls (e.g., orange construction fence and hay bales) along perimeter road

Photo 5
Typical conditions of perimeter road and roadside berm, directing stormwater west

Photo 6
Embankment and drainage channel, directing run-on stormwater away from active areas

Photo 7
Water bars along perimeter haul road, directing stormwater onto Active Fill Area

Photo 8
Typical condition of perimeter road

Photo 9
Erosion gully on north side of Inactive Fill Area

Photo 10
Typical condition of perimeter road and roadside berm, directing flow west

Photo 11
Access ramp to top deck off perimeter haul road

Photo 12
Perimeter cattle fence at north of property

Photo 13
Typical conditions of north embankment of Inactive Fill Area

Photo 14
Typical conditions of perimeter road

Photo 15
Typical conditions of vegetation on top deck of Inactive Fill Area

Photo 16
Woody vegetation present near perimeter road on Inactive Fill Area

Photo 17
Typical conditions along top deck access road

Photo 18
Tall and woody vegetation present on top deck of landfill

Photo 19
Small retention area near top deck access road

Photo 20
Low area in existing grades near vehicle turnaround

Photo 21
Water truck deploying misting spray along perimeter road for fugitive dust control

Photo 22
Typical erosion rills with larger washout on downhill side of bench

Photo 23
Typical condition of Ash Haul Road

Photo 24
Closeup and scale of typical erosion rills along downhill side of bench

Photo 25
Animal burrows present along elevated lip on outer edge of bench

Photo 26
Incised/ eroded drainage channel at toe of south embankment and adjacent Ash Haul Road

Photo 27
Woody vegetation on downhill side of bench

Photo 28
Typical conditions of bench and side slopes, south side of Inactive Fill Area

Photo 29
Incised/ eroded drainage channel directing water toward retention area

Photo 30
Exposed ash along bench on south side of Inactive Fill Area

Photo 31
Animal burrows present along elevated lip on outer edge of bench

Photo 32
Desiccation of soil cover and typical lateral confining berms on bench

Photo 33
Woody vegetation present at toe of side slope

Photo 34
Closeup and scale of typical animal burrow present on outer edge of bench

Photo 35
Animal burrows present on outer edge of bench

Photo 36
Typical width of incised/ eroded drainage channel at toe of south embankment

Photo 37
Typical erosion rills and vegetation along benches

Photo 38
Pooling area between lateral confining berms on bench

Photo 39
Closeup and scale of deep erosion gully on downhill side of bench

Photo 40
Deep erosion gully on downhill side of bench

Photo 41
Typical vegetation and erosion rills on downhill side of bench

Photo 42
Lateral confining berm along bench

Photo 43
Apparent irregularity in soil cover conditions along downhill side of bench

Photo 44
Typical vegetation and conditions of bench and side slopes

Photo 45
Animal burrows present on outer edge of bench

Photo 46
View of south side of Inactive Fill Area, showing soil cover and benches

Photo 47
Typical erosion rills on downhill side of bench

Photo 48
Small-to-moderate sized hole or cave-in at crest of berm

Photo 49
Uncovered ash fill area, looking up toward soil cover on benches and side slopes

Photo 50
Run-off from Water Truck Refill Station into South Retention Area

Photo 51
Condition of Water Truck Refill Station

Photo 52
Erosion washout on downhill side of bench

Photo 53
Woody vegetation on toe of side slope

Photo 54
View of south side of Inactive Fill Area, showing soil cover and benches

Photo 55
Deep erosion rills/ potential cracking along southwestern corner of Inactive Fill Area

Photo 56
Typical condition of benches and side slopes along west face of Inactive Fill Area

Photo 57
Isolated sloughing on downhill side of benches
(light-colored fly ash exposed beneath cover layer of bottom ash)

Photo 58
Tension cracking along crest of western slope in Inactive Fill Area

Photo 59
Typical downhill side of bench with minor erosion of uncovered Inactive Fill Area

Photo 60
Typical condition of Active Ash Fill Area

APPENDIX B
Inspection Forms

Annual CCR Landfill Inspection Checklist

Facility Name: Springerville Generating Station

Inspection Date: 19 December 2023

Owner/Operator: Tucson Electric Power Company

Persons Present During Inspection		
Name	**Title/Position**	**Representing**
Mark Bentley	Engineer	Haley & Aldrich
Rob Yeoman	Engineer	Haley & Aldrich
Person Responsible for Inspection		
Steven F. Putrich, P.E.	Engineer	Haley & Aldrich

Operations Record Review				
Item	**Comments/Observations**	NO ACTION	MONITOR	REPAIR
Are weekly inspections being performed and records kept in the facility record?	Yes. 7-day inspections are performed by TEP. Inspection records are kept in the landfill operating record.	X		
Has facility record been reviewed as part of this inspection?	Yes. Copies of 7-day inspection records were reviewed.	X		
Landfill Inspection - Facility Operations				
Item	**Comments/Observations**	NO ACTION	MONITOR	REPAIR
Is facility access restricted by fences, gates, etc. to control access?	Yes. Access is restricted by way of guard shack at front entrance and adjoining properties' fencing.	X		
Is CCR placement consistent with design plans?	Yes. In general, CCR is placed in a manner that is consistent with design, as we understand it.	X		
Is CCR being placed in lifts and compactive effort applied?	Yes. Stockpiles are graded into lifts and compacted by tracked dozers.	X		
Is CCR being placed in a manner to promote positive drainage?	Within the Active Fill Area, CCR is placed to direct run-off stormwater to retention structure. Inactive Fill Areas have benches which limit erosion, but positive drainage could be improved; monitor for instabilities.		X	
Is there evidence of water ponding in the active fill area?	None were visually observed at time of inspection.	X		
Are haul roads properly maintained and generally in good condition?	Haul road base course material generally appeared in good condition with exception of mild rutting near where Ash Haul Road and perimeter road connect, east of the Inactive Fill Area.	X		

Landfill Inspection - Structural Stability

Item	Comments/Observations	NO ACTION	MONITOR	REPAIR
Is there evidence of discharges to Waters of the U.S.?	No. Stormwater from Ash Landfill is effectively controlled by outer and inner drainage channels and retention areas around the property.	X		
Is there evidence of erosion on fill slopes or inactive landfill areas?	Deeper erosion rills are isolated but occur at numerous locations along southern embankments and benches and should consider being repaired if over 12" deep.			X
Is there evidence of surface cracking at top of ash fill or along any slope benches?	Evidence of localized, minor surface cracking exists at top of slope of uncovered, western face of Inactive Ash Fill Area. Monitor and repair if changes observed.		X	
Is there evidence of sinkholes or animal burrows?	Evidence of animal burrows at crests of benches along soil cover of southern embankment from which erosion is propagating.			X
Are fill slopes in accordance with design plans?	Fill slopes appear to be approximately 1.45(V):1(H) in accordance with the design plans.	X		
Is there evidence of slides, sloughs, or scarps?	Isolated areas of sloughing appear on the uncovered, western face of the Inactive Ash Fill Area.		X	
Is there any evidence of water seepage through fill slopes or at toe of fill slopes?	None observed at the time of the inspection, though numerous areas of ponding exist.		X	
Is there evidence of movement, erosion, or instability in any soil embankments retaining CCR at the landfill?	There are no known soil embankments retaining CCR at this landfill.	X		
Is vegetation present in inactive/closed landfill areas? Comment on density, height, and type.	Yes. Native vegetation is present on areas with soil cover. It appears to be denser on the eastern and northern fill slopes whereas it is sparser on the south fill slope. Vegetation height varies 6" to 6'.		X	

Additional Comments:

See photos/figures in inspection report which identify sloughing, animal burrows, surface cracking, deeper erosion, woody vegetation, and potential ponding areas. Items noted for repair are not considered deficient or as substantively affecting operation and safety of the landfill at the time of inspection, and are instead recommended to be monitored and addressed as part of ongoing maintenance activities.