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Installation Assessment Relook Program
Working Document
Crane Army Ammunition Plant
Martin County, Indiana

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BACKGROUND

The U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) has requested additional aerial imagery analysis support from the U.S. Environmental Protection Agency's (EPA) Environmental Photographic Interpretation Center (EPIC). A relook program has been initiated under the Army's Installation Restoration Program in which installations, assessed prior to the EPA/Army Interagency Agreement and to the availability of EPIC's historical analysis reports, are being reassessed for any possible CERCLA[1] problems. Historical imagery for thirty installations will be acquired and analyzed to identify potentially contaminated areas or contamination sources.

These installation reports will be in the form of working documents and delivered incrementally to comply with USATHAMA's schedule.

[1]Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("Superfund")

INTRODUCTION

An analysis of historical aerial photography of the Crane Army Ammunition Plant (CAAP) was conducted to identify potentially contaminated areas or potential sources of contamination. CAAP, located approximately 40 kilometers (25 miles) southwest of Bloomington, Indiana, occupies a 24,962-hectare (62,404-acre) area and was officially commissioned on December 1, 1941.* Throughout this report, collateral information supplied by USATHAMA will be denoted by an asterisk (*).

Aerial photography of CAAP was obtained to represent the period from 1940 to 1974.[1] Historical black and white photography for the years 1940, 1948, 1953, 1958, 1966 and 1974 was used for this analysis. Because CAAP was not yet built in 1940, no analysis of the 1940 photography has been included.

Fifteen sites have been delineated, and a chronological history of each is given in the Site Listings section of this document. One print of each site has been provided; each print was chosen to represent the year in which the most environmentally significant features were visible on each site. Significant features from other years are also annotated with the name of the feature and the year(s) in which it was visible. Site boundaries or areas used in the analysis were determined by observations made from the aerial photography and do not denote legal property lines or ownership.

Several areas which may be of interest (e.g., vehicle and equipment storage areas (VES), sewage treatment plants (STP), open storage areas (OS), etc.), but were not deemed significant enough to be listed as sites, have been annotated on the accompanying location maps; these areas will generally not be

[1]A complete listing of all maps and photography used for this document can be found in the References section.

discussed. Extensive ground scarring was evident throughout CAAP; most of these scars appear to have been construction-related and therefore are not annotated or discussed.

METHODOLOGY

A search of government and commercial aerial photographic sources was undertaken to obtain the best quality photography available of the site spanning the desired time frame. A listing of all maps and photography used for this report can be found in the References section.

The analysis was performed by stereoscopically viewing pairs of transparencies, backlit on a standard Richards light table. By observing the site three-dimensionally, and at various magnifications, the analyst could search for objects, features, or "signatures" associated with different environmental conditions. The term "signature" refers to a combination of characteristics (such as color, tone, shadow, texture and size) which indicate a specific object or condition, even though the object itself is not identifiable from the photography.

Prints were made from coverages which reveal significant changes in the study area. Findings are annotated on overlays to these prints, or to maps of the study area, and full descriptions are provided in the accompanying text. The resolution quality of the original, transparent photography used by the analyst is degraded on the prints due to factors inherent in the printing process. Therefore, some objects or features identified from the original film and described in the text may not be clearly discernible, or even visible, on the photographic prints presented in this report.

It should be noted that site boundaries or areas used in this analysis were determined by observations made from the aerial photography and do not denote legal property lines or ownership.

In this report, a distinction is made between <u>probable</u> and <u>possible</u> identifications. <u>Probable</u> is used when a limited number of discernible signatures allows the analyst to be reasonably sure of a particular identification. <u>Possible</u> is used when few signatures are discernible, and the analyst can only infer an identification.

SUMMARY

Four sites, Sites 1, 13, 14 and 15, were involved in burial or excavation activity. Possible refuse and standing liquid were visible in the Site 1 excavation. A trench containing dark- and light-toned square objects abutted a scarred area of probable former trenches at a trench-method landfill (Site 13) in 1953. Lush vegetation later grew over the site. Site 14 was not active until 1974, when three large trenches (one of which contained dark-toned material or liquid), and a small, liquid-filled impoundment were visible.

A fenced plot, which was devoid of vegetation in 1974, and a dark-toned object on the plot were the only indications of activity at a reported mustard gas burial plot* (Site 15).

Seven manufacturing areas have been annotated as sites (Sites 3-9). A drainage channel which reportedly received red water discharge, and a nearby scarred and stained area, were the more significant features in the Rockeye/3-Inch Explosive Loading Area* (Site 3). Site 4, the 40-Millimeter Loading Complex,* contained possible drums (1948), open storage, ground scarring, a stained building roof, and possible ground stains. Several of the roofs in Site 5 (the Pyrotechnic Area*) also appeared stained. A small rectangular pit, a vehicle and equipment storage area, and many mounds of material (probable sand and gravel) were visible within Site 5. Open burning was visible in the storage/transport area in 1966. Ground scarring was evident at Site 6 (Booster Area*).

Pipelines connected Sites 7 and 9 (Mine Filling Areas A & B*) to an intermediary building. Ground scarring and some staining of building roofs were apparent in each site. A circular liquid-filled basin was visible in 1966 and 1974 at Site 7.

Site 8, the Load and Fill Area,* contained ground staining, stained building roofs, two horizontal tanks, two probable vertical tanks, a pool of dark-toned standing liquid (1974), and a smokestack. Smoke or steam was vented from the smokestack and from another onsite building.

Sites 10 and 11 are the Ordnance Burning Area* and the Ordnance Demolition Area.* Several trenches lined by mounded material, a trench containing dark-toned material, two small possible pits, and two large depressions were visible at Site 10. Site 11 contained several series of pits, some of which were stained or contained dark-toned material. Many of the pits present in 1974 contained standing liquid. Small trenches bordered a probable flash pad.

Site 12 appeared to be a storage area. Open storage, a circular possible revetment, ground scars, an open tank, a small rectangular walled or fenced area with a nearby probable trailer and possible associated ground staining were visible onsite.

Staining was evident near most of the 17 vertical tanks which composed Site 2, a tank farm.

SITE LISTINGS

SITE 1 (Figure 9)

1948 - No photo coverage.

1953 - An access road leads upslope to the edge of a nearly triangular excavation. Small pools of standing liquid dot the excavation floor. An unidentifiable structure is present in the southwest corner of the excavation. A ditch drains from the western edge of the excavation. The area surrounding the excavation has been cleared of vegetation. An access road north of the excavation leads to a scarred (GS) area.

1958 - (No stereo coverage) Small pools of standing liquid and the unidentifiable structure remain in the excavation. The ditch west of the excavation and the scarred area to the north of the excavation remain.

1966 - Floor of excavation remains dotted with standing liquid (not annotated). The unidentifiable structure is no longer visible. A truck is visible on the access road (not annotated) which descends into the excavation. Another truck is backed up to the northern rim of the excavation. (These trucks have been annotated although they are not visible on the selected photo enlargement.) Light-toned possible refuse lines the northern slope of the excavation. The scarred area north of the excavation and the area surrounding the excavation are revegetating (REV).

1974 - The excavation has been filled. A large pool of standing liquid is visible in the center of the filled area. The area surrounding the former excavation continues to revegetate.

SITE 2 (Figure 9)

1948 - No photo coverage.

1953 - The site is a tank farm which contains 17 vertical tanks (VT). Sets of three tanks are grouped into revetments; the northeastern revetment encircles only two tanks. Ground staining (GST) is evident in two revetments.

1958 - (No stereo coverage) Staining is evident near many of the tanks. The area surrounding the tank farm has revegetated.

1966 - Staining remains near many of the tanks.

1974 - Staining remains near many of the tanks. A ground scar is visible north of the tank area.

SITE 3 (Figure 10)

1948 - The Rockeye/3-Inch Explosive Loading Area* is not yet present.

1953 - The site appears recently constructed; little ground staining or signs of activity are visible. Vegetation is scarce. A large ground scar is visible at the northeast corner of the site, beyond the site's fence. A drainage channel cuts from the central portion of the site towards the northeastern corner, and exits the site under the northern fence. This channel reportedly received red water discharge.* A large ground scar is visible on the western edge of the site, beyond a main road. A small possible ground stain is visible in the southern portion of this scarred area. A faint loop access road encircles an area of the ground scar which is dotted with small dark-toned ground stains.

1958 - Many areas of the site, especially those near drainage paths, are beginning to revegetate. The drainage channel which exits under

the northern fence remains. The ground scar at the northeast corner of the site, and the ground scar west of the site have revegetated. The faint loop access road and small dark-toned ground stains and possible ground stain are no longer visible.

1966 - More vegetation is visible onsite. No other significant change.

1974 - The site has revegetated further. The discharge point of the drainage channel under the fence is obscured by vegetation. Smoke or steam is being vented from one of the onsite buildings.

SITE 4 (Figure 11)

1948 - The 40-Millimeter Loading Complex* occupies the site. Possible drums are stored at the western and southern edges of the southern building. A ground scar which contains at least one possible pool of standing liquid (SL) is visible near the northeast corner of the same building. Ground scars are also located at the southern end and northeastern corner of the site.

1953 - The possible drums have been replaced by probable crates and other rectangular objects. The ground scar with the possible pool of standing liquid is revegetating. The possible pool of standing liquid remains. The ground west of the southern building appears stained. The ground scars at the southern end and northeastern corner of the site remain.

1958 - Neither storage of materials nor ground staining is apparent near any of the buildings. The ground scars are beginning to revegetate.

1966 - A small amount of materials is openly stored near the buildings. The roof of the southern building appears stained. A possible ground stain emanates from the eastern edge of the southern

building. Two fenced enclosures at the southern end of the same building are stained. The ground scar near the northeastern corner of the site has almost completely revegetated; the ground scar at the southern end of the site is revegetating more slowly.

1974 - The two enclosures do not appear as heavily stained. No other ground staining is visible. A few materials are openly stored near the buildings. The ground scar at the northeastern corner of the site has completely revegetated. The ground scar at the southern end of the site continues to revegetate.

SITE 5 (Figure 11)

1948 - The Pyrotechnic Area* comprises the major portion of the site. Four large buildings (B) and several smaller buildings occupy a major portion of the site. The roofs of at least two of the large buildings appear slightly stained. A scarred area (not annotated) west of the buildings contains a small, rectangular pit and dark-toned material. A small scarred area is visible northwest of the buildings.

Several linear ground stains appear in an empty vehicle and equipment storage area southwest of the buildings. Two large buildings south of the vehicle and equipment storage area are joined by pipeline to a smaller, central building. The ground southwest of these three buildings is scarred. The ground near the southeastern corner of the vehicle and equipment storage area is also scarred. Two small fence-enclosed buildings are visible south of the scarred area. A loop access road visible northwest of the vehicle and equipment storage area is lined by several rectangular ground scars. A circular ground scar borders the southern edge of the loop road.

Several dark-toned rectangular objects are stored along rail lines in a storage/transport area located north of the main road which borders the north side of the four main buildings.

Many mounds of material (MM) and a possible vehicle are located in a graded (GR) area southeast of the four main buildings (east of the main north-south road).

1953 - Probable buried pipeline scars are visible near the four main buildings. The roofs of the buildings still appear only slightly stained. The small pit and some dark-toned material remain in the small scarred area west of the buildings. The small scarred area northwest of the buildings has revegetated.

Many trucks are now parked in several of the stained areas of the vehicle and equipment storage area. The three pipeline-connected buildings and nearby ground scar remain southwest of the vehicle and equipment storage area. The ground scar near the southeastern corner of the vehicle and equipment storage area has revegetated. The two fence-enclosed buildings south of the former scarred area remain. The loop access road northwest of the vehicle and equipment storage area has revegetated; however, many of the associated ground scars remain.

Portions of the rail lines in the storage/transport area north of the four main buildings appear darkly stained. Dark-toned rectangular objects remain stored in the area.

Many large light-toned mounds of material and one dark-toned mound of material are stored in the graded area southeast of the four main buildings. These materials appear to be sand and gravel, probably used as road or construction materials.

1958 - The probable buried pipeline scars are no longer visible. The roofs of several of the main buildings remain slightly stained. Light-toned mounded material is visible near the pit and several dark-toned (DK) objects in the graded area west of the buildings. Much of the graded area has revegetated.

Most of the vehicle and equipment storage area is occupied by vehicles and stored materials. A horizontal tank (HT) is visible near the southwest corner of the vehicle and equipment storage area. Southwest of the vehicle and equipment storage area, the three pipeline-connected buildings and the ground scar remain. Several small possible vertical tanks are visible near the southernmost building. Near the southeast corner of the vehicle and equipment storage area, an oblong loop access road encircles a series of ground scars. The ground scars are arranged in two parallel rows; a faint road is visible between the two rows. The scars may be remnants of pits from a former burning area* reportedly in this vicinity. A similar set of ground scars and portions of an encircling loop access road are visible adjacent to the first series of ground scars and roads. The two fence-enclosed buildings are still visible south of the ground scarred area. The ground scars surrounding the former loop access road northwest of the vehicle and equipment storage area have revegetated.

The rail lines in the storage/transport area do not appear as darkly stained as in 1953. Many dark-toned rectangular objects are stored in the area.

Fewer and smaller mounds of material are visible in the graded area southeast of the four main buildings.

1966 - The building roofs remain slightly stained. Several rectangular dark-toned objects are visible near the pit in the graded area west of the main buildings.

Few materials or vehicles/equipment are visible in the vehicle and equipment storage area, which appears stained. The horizontal tank near the southwest corner of the vehicle and equipment storage area remains, as do the three pipeline-connected buildings and the possible vertical tanks visible in 1958. The ground scar near the three buildings is revegetating. The oblong loop road and two ground scar series formerly visible southeast of the vehicle and equipment storage area have completely revegetated (annotated with historical boundary symbol). The two fence-enclosed buildings south of the former ground scarred area remain.

Smoke indicates open burning between the two rail lines in the storage/transport area. A series of five small oval ground scars is visible along the rail line in the southern portion of the area. Little storage of materials is visible.

More mounded material is visible in the graded area southeast of the four main buildings. The majority of the materials appear to be sand. Dark-toned possible standing liquid is also visible in the northeast corner of the graded area.

1974 - The main building roofs no longer appear stained. The pit and a few light-toned objects are visible in the small graded area west of the main buildings.

Many vehicles/equipment are parked in the vehicle and equipment storage area which remains stained. Another horizontal tank has been added beside the one visible in 1966. The

possible vertical tanks are no longer visible near the southernmost of the three pipeline-connected buildings. A horizontal tank has been added near the easternmost building. The ground scar near this building has revegetated.

Open storage of many large, light-toned rectangular objects is visible in a new scarred area southeast of the vehicle and equipment storage area. The two fence-enclosed buildings are still visible south of this area.

The storage/transport area has changed dramatically. The rail lines have been removed and several buildings constructed. A large ground scar remains in the northern half of the area.

Light-toned mounded material and one area of dark-toned material are visible in the graded area southeast of the four main buildings. The dark-toned possible standing liquid present in 1966 is no longer visible.

SITE 6 (Figure 11)

1948 - Vegetation appears lush along the pathways of probable buried pipelines between buildings. Erosion rills are visible in a large scarred area on the eastern edge of the site. A large ground scar is visible in the northern portion of the site.

1953 - The vegetation above the probable buried pipelines is no longer distinguishable from the surrounding vegetation. The scarred area on the eastern edge of the site is revegetating. The ground scar in the northern portion of the site is heavily eroded.

1958 - The large ground scar in the northern portion of the site remains heavily eroded. A new ground scar is visible in the central portion of the site.

1966 - The ground scar in the northern portion of the site is revegetating. The ground scar in the central portion of the site is being used for vehicle (V) parking.

1974 - No significant change.

SITE 7 (Figure 12)

1948 - Several ground scars, which are probably construction-related, are scattered near site buildings. A short access road at the southern edge of the site leads to a large scarred area. A pipeline is visible between Site 7 (Mine Filling Area A*) and a small building located west of the site. This building is also connected by pipeline to Site 9 (Mine Filling Area B*). The pipeline and building are visible through 1974 and will not be further discussed.

1953 - Most of the ground scars are beginning to revegetate.

1958 - One large ground scar remains on the eastern edge of the site.

1966 - A circular basin which contains dark-toned liquid has been installed near the southern edge of the site. The roofs of several buildings onsite appear slightly stained. The eastern ground scar is revegetating.

1974 - The basin near the southern edge of the site contains less liquid than in 1966. The roofs of several of the buildings remain slightly stained.

SITE 8 (Figure 13)

1948 - Dark-toned ground staining is visible along a road and in a storage area in the western portion of the site. A large ground scar is located at the southwestern corner of the site.

One smokestack and two tall probable vertical tanks are located near a building near the eastern edge of the site. A

series of five large buildings are visible southeast of this building. Ground scarring is evident along the eastern edge of the site.

Many areas of open storage are visible onsite throughout the course of the analysis. These areas will generally not be further discussed.

1953 - Ground staining remains in the storage area in the western portion of the site. The large ground scar in the southwestern portion of the site is revegetating.

Two probable vertical tanks and the smokestack remain near the eastern edge of the site. An adjoining oval dark-toned ground stain is visible. Two revetted horizontal tanks have been added south of the building. The roof of the northeasternmost of the five large buildings is stained. Two ditches lead from the west central building of the series to a new building to the east.

1958 - Ground staining is no longer visible in the storage area in the western portion of the site.

The two probable vertical tanks and oval ground stain are no longer visible near the eastern edge of the site. The smokestack and two horizontal tanks remain. The roofs of all but the southeastern building of the series of five large buildings appear stained. A pipeline is visible between the west central

building and the road to the east, where two ditches were visible in 1953. Ground staining is visible in a parking lot near the southwestern building. Small mounds of dark-toned material are stored in two rows west of the west central building.

1966 - The two horizontal tanks and smokestack are still evident near the eastern edge of the site. The four building roofs that appeared stained in 1958 remain stained. The pipeline visible in 1958 between the west central building and the road to the east remains evident. The two rows of dark-toned material visible west of the west central building in 1958 have been replaced by rectangular dark-toned objects. Ground staining is no longer visible near the southwestern building. Smoke or steam is being vented from the southeastern building.

1974 - Smoke or steam is being vented from the smokestack near the eastern edge of the site. The two horizontal tanks remain nearby. The same four building roofs which previously appeared stained remain stained. Due to the poor resolution of the photography, the pipeline between the west central building and the eastern road is not visible. The group of small rectangular dark-toned objects west of the west central building is also not discernible. Smoke or steam is no longer being vented from the southeastern building. Liquid appears to drain east across the road east of the southeastern building, to collect in a pool of dark-toned standing liquid.

SITE 9 (Figure 12)

1948 - Several ground scars, which are probably construction-related, are scattered near site buildings. A pipeline is visible between Site 9 (Mine Filling Area B*) and a small building located northeast of the site. This building is also connected by pipeline to Site 7 (Mine Filling Area A*). The pipeline and building are visible through 1974 and will not be further discussed.

The main site buildings are joined by two sets of "V"-shaped pipelines and several other pipelines. One small pool of probable standing liquid is visible near the northern set of "V"-shaped pipelines. The roofs of the site's two easternmost buildings appear stained.

1953 - Most of the ground scars are revegetating. The small pool of probable standing liquid is no longer visible near the northern set of "V"-shaped pipelines. Possible ground stains are visible in the small parking lot south of the southern set of "V"-shaped pipelines. The roofs of the site's two easternmost buildings appear only slightly stained (not annotated).

1958 - The small parking lot south of the southern set of "V"-shaped pipelines no longer contains a ground stain. The roofs of the site's two easternmost buildings remain stained.

Extensive staining is visible in the vehicle and equipment storage area located north of the site.

1966 - Most of the ground scars have completely revegetated. The roofs of the site's three easternmost buildings appear stained.

The vehicle and equipment storage area located north of the site is more extensively stained.

1974 - No significant change is visible onsite. No staining is evident in the vehicle and equipment storage area located north of the site.

Range 2167* is visible east of the site. Possible liquid appears to drain from the southern edge of the range's building. No significant activity was identifiable at this range in previous years.

SITE 10 (Figure 14)

1948 - At least three trenches are visible in the central portion of the site. Dark-toned material (M) is mounded south of the trenches. More dark-toned mounded material and several vehicles are visible at the western end of the site. A building and bunker in the eastern end of the site appear to be connected by pipeline. Streams flow along the northern and southern edges of the site.

1953 - Four dark-toned trenches are now visible in the central portion of the site. Mounded material lines both sides of each trench. A linear ground scar is visible next to the western trench. Two dark-toned objects are visible next to the eastern trench. A dark-toned stain is visible at the end of a road extending from the eastern trench. Three small buildings are visible at the western end of the site.

The access roads leading to the pipeline-connected building and bunker have been improved.

1958 - A new trench is visible on the western end of the four existing trenches (in the area which was scarred in 1953). Scarring has replaced the two possible pits visible along the eastern trench in 1953. Mounded material lines each side of the four existing trenches and one side of the newest trench. A small, dark-toned building sits in the stained area at the end of the road leading from the eastern trench. The access roads leading to the pipeline-connected building and bunker have been expanded, and are now nostril-shaped.

1966 - A sixth trench may be under construction at the western end of the five existing trenches. All are lined by mounded material. Dark-toned material lines the bottom of one of the trenches. Two large depressions visible southwest of the six trenches are separated by a ridge of earthen material. The small dark-toned building visible in 1958 is no longer present. Two probable tanks (T) border one of the three westernmost buildings. The ground north of the three westernmost buildings appears very disturbed (DG); many ground scars slash through formerly vegetating areas. An access road (not annotated) from the eastern end of the site leads to a new small barren area.

1974 - Four of the trenches are encircled by well-maintained access roads and remain lined by mounded material. Possible trenches are visible on the west and east sides of the four trenches. Little activity is visible near these two possible trenches. Dark-toned material no longer lines the bottom of one of the trenches.

Possible vehicles are visible in the two large depressions southwest of the trenches. The ground north of the westernmost buildings has revegetated. The barren area at the end of the access road in the eastern end of the site has been enlarged.

SITE 11 (Figure 15)

1948 - A series of light-toned pits borders the southern edge of the loop road which accesses the Ordnance Demolition Area.* Two probable vehicles are visible at the western tip of the loop road.

1953 - The loop of the access road has been widened. The pits which were present in 1948 are no longer visible. A clean series of pits is visible along the southern edge of a new, small loop road west of the larger loop road. The site has been expanded to the southeast, where a new probable flash pad is visible. A few small groups of dark-toned material are present on the probable flash pad.

1958 - The pits at the southern edge of the smaller loop road are now stained or contain dark-toned material. Dark-toned material is no longer visible on the probable flash pad.

1966 - The southern pits contain dark-toned material. They are separated from a small building to the north by a low, wide wall of light-toned mounded material. No activity is visible at the southeastern probable flash pad.

1974 - The site has expanded to the south. The former southern pits are no longer visible. Large arrays of pits extend south and southwest from the former pit area. Many of the pits appear to contain standing liquid (not annotated). Many trees near the

southern array of pits appear stressed. A ground scar west of the former pit area appears to be revegetating. A nearby pond may collect runoff from the area. A series of small trenches and other ground scars (not all are annotated) extend beyond the southeastern probable flash pad.

SITE 12 (Figure 16)

1948 - A fence surrounds a partially dismantled barracks area. Several small ground scars and a large, circular ground scar are visible northwest of the fenced area.

1953 - Only one building remains in the fenced barracks area. Most of the area is being utilized for open storage. Dark-toned material and possible ground staining are visible in the southeast corner of the fenced area. Ground scarring remains northwest of the fenced area. A possible sunken open tank has been placed in the area which contained the circular ground scar in 1948.

1958 - Most of the fenced area is revegetating. No open storage or ground staining is visible. Some of the ground scars northwest of the fenced area have revegetated. Three possible vehicles are visible in the area of the remaining ground scars. The open tank remains.

1966 - The fence and building have been removed. A circular possible revetment or burning stall and a possible vertical tank have been added near the southeast corner of the site. The ground scars northwest of the site have almost completely revegetated. The possible open tank is not visible; it may be obscured by vegetation. Possible vehicles are no longer present.

1974 - Most of the former fenced area has been paved or graded. A rectangular walled or fenced vegetated area has replaced the circular possible revetment and possible vertical tank near the southeast corner of the site. A probable trailer and possible ground staining are visible at the northern end of the rectangular area. One ground scar is visible northwest of the site, near the former possible open tank location. The possible open tank is not visible.

SITE 13 (Figures 16 and 17)

1948 - The landfill is not yet present.

1953 - The site is apparently a trench method landfill (LF). An open trench is visible at the northern edge of a square, striated scarred area. The striations probably result from the filling of former trenches. The open trench contains at least six light-toned (LT) square objects and one darker-toned square object. All of these objects fill the width of the trench. A road cuts across the northwest corner of the landfill.

1958 - The landfill is no longer active and has almost completely revegetated. The northwestern road remains.

1966 - Lush vegetation covers all but the northwestern corner of the landfill. A grassy area is visible in the path of the former northwestern road. A new vehicle trail cuts across the northwest tip of the former landfill.

1974 - No significant change.

SITE 14 (Figure 17)

1948-1966 - Site is not yet active.

1974 - An access road leads to an area of disturbed ground which contains three large trenches. A small pool of standing liquid is visible between two of the trenches. The material excavated to form the trenches is mounded at the trench sides. Dark-toned material or liquid is visible on the floor of the western trench. A small, rectangular liquid-filled impoundment is visible west of the area of disturbed ground.

SITE 15 (Figure 18)

1948 - The site is not yet active.

1953 - A small amount of ground scarring is evident near an adjoining bunker. The site is reportedly a plot used for burial of mustard gas.*

1958 - No activity or scarring is visible.

1966 - A possible fence may surround the plot.

1974 - The fenced plot appears barren of vegetation. One dark-toned object is visible near the northeast corner of the plot.

REFERENCES

AERIAL PHOTOGRAPHY

Date	Agency	Mission Code	Frame #	Orig. Scale	EPIC Frame #
July 20, 1940	NARS[1]	CMH	1A,2A/20-49, 40-58,3A/85-93, 1-19,55-88, 29-35	1:20,000	Roll 40:005
April 8, 1948	USGS[2]	DK	7-9,29-35, 41-48,86-91	1:36,000	9411-9434
October 11, 1953	ASCS[3]	CMH	1M/27-30,41-46, 92-99,109-119; 2M/19-30,41-51; 2M/18,31,40,52; 1M/25,31,40,47 91,100,108,120	1:20,000	9540:218-269; 7633:070-081
July 29, 1958	ASCS	CMH	78-88,96-106, 143-151	1:20,000	9540:187-217
August 9, 1958	ASCS	CMH	159-161,206-215, 237	1:20,000	9540:173-186
August 3, 1966	ASCS	CMH	37-41,36,42	1:20,000	9540:120-124; 7633:094,095
October 5, 1966	ASCS	CMH	21-26,33-40 76-86,99-109, 137-148; 22,27,32,41,75, 87,98,110,136, 144,145,149	1:20,000	9540:125-172 7633:082-093
September 23, 1974	ASCS	18101	3-7,22-30,35-41; 2,8,21,31,34,42	1:40,000	9540:099-119 7633:064-069

[1]National Archives and Records Service, U.S. General Services Administration

[2]U.S. Geological Survey, U.S. Department of Interior

[3]Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture

MAPS

Source	Name	Scale	Date
USGS	Indian Springs, Ind.	1:24,000	1978
USGS	Koleen, Ind.	1:24,000	1978
USGS	Loogootee, Ind.	1:24,600	1974
USGS	Odon, Ind.	1:24,000	1974
USGS	Owensburg, Ind.	1:24,000	1975
USGS	Scotland, Ind.	1:24,000	1979
USGS	Shoals, Ind	1:24,000	1960
USGS	Williams, Ind.	1:24,000	1978

LEGEND

B - BUILDING
DG - DISTURBED GROUND
DK - DARK-TONED
GR - GRADED
GS - GROUND SCAR
GST - GROUND STAIN
HT - HORIZONTAL TANK
LF - LANDFILL
LT - LIGHT-TONED
M - MATERIAL
MM - MOUNDED MATERIAL
OS - OPEN STORAGE
REV - REVEGETATING
SL - STANDING LIQUID
ST - STAIN
STP - SEWAGE TREATMENT PLANT
T - TANK
V - VEHICLE
VES - VEHICLE AND EQUIPMENT STORAGE
VT - VERTICAL TANK

- - - - - ACCESS ROAD
-·►·-·► DRAINAGE
TTTTTTTTT EDGE OF SLOPE
-×-×-×- FENCE
---------- HISTORICAL/FUTURE BOUNDARY
— — — INSTALLATION BOUNDARY
-⊣⊢-⊣⊢- PIPELINE
,,,,,,,,,, REVETMENT
——————— SITE BOUNDARY