
Final

**Decision Document TAMPEEL
Former Lordstown Ordnance Depot
Lordstown, Ohio
FUDS Property No. G05OH0149-23**

**Prepared for:
U.S. Army Corps of Engineers Louisville District
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Acronyms and Abbreviations

| | |
|----------|--|
| AR | administrative record |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| COPC | contaminants of potential concern |
| DDT | dichlorodiphenyltrichloroethane |
| DERP | Defense Environmental Restoration Program |
| DoD | Department of Defense |
| ELCR | excess lifetime cancer risk |
| ERA | ecological risk assessment |
| FLOD | Former Lordstown Ordnance Depot |
| FUDS | Formerly Used Defense Site |
| HHRA | Human Health Risk Assessment |
| HI | Hazard Index |
| MCL | Maximum Contaminant Level |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| OCC | Ohio Commerce Center |
| Ohio EPA | Ohio Environmental Protection Agency |
| PCB | polychlorinated biphenyl |
| PRG | Preliminary Remediation Goal |
| RDA | recommended daily allowance |
| RI | remedial investigation |
| SARA | Superfund Amendments and Reauthorization Act |
| SVOC | semi-volatile organic compound |
| TAMPEEL | Trumbull Area Multi-Purpose Environmental Education Laboratory |
| U.S. | United States |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| USC | United States Code |
| VOC | volatile organic compound |

Decision Document Executive Summary and Approval Signature

FUDS Property No. G05OH0149-23

This Decision Document was prepared for the Trumbull Area Multi-Purpose Environmental Education Laboratory Site (TAMPEEL Site). The purpose of the Decision Document is to set forth the selected remedy for cleanup of the Site as decided by the executing federal agency, which is United States Army Corps of Engineers (USACE). The TAMPEEL Site encompasses approximately 39 acres in the northwest corner of the Former Lordstown Ordnance Depot (FLOD), in Lordstown Township, Trumbull County, Ohio. The FLOD was owned by the United States under the jurisdiction of the Secretary of the Department of Defense (DoD) from 1942 to 1967, and was used by the DoD to transport, store, repair, and maintain military equipment and supplies. In 1967, the DoD transferred the TAMPEEL Site to the Lordstown Board of Education, and the Trumbull County Board of Education operated the Site as an outdoor environmental education laboratory.

The FLOD was transferred from DoD control prior to October 17, 1986 and, therefore, meets the definition of a Formerly Used Defense Site (FUDS). A FUDS is a real property that was owned by, leased to, or otherwise possessed by the United States under DoD jurisdiction and transferred from DoD control before October 17, 1986. In accordance with Defense Environmental Restoration Program (DERP) legislation (10 United States Code [USC] 2701 et. seq.), the Secretary of the DoD is authorized to carry out response actions with respect to releases of hazardous substances or pollutants and contaminants from active installations and FUDS. Under DERP, sites follow the remedial process outlined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The USACE is the lead agency for purposes of implementing the FUDS program in Ohio for the DoD and works in coordination with the Ohio Environmental Protection Agency (Ohio EPA).

The USACE, in coordination with the Ohio EPA, performed a Remedial Investigation (RI) at the Site to evaluate current and potential threats to human health and the environment. The RI was performed in the children's activity areas, Beaver Creek, Study and Beaver Ponds, Aspen Creek, TAMPEEL Spring, and suspected disposal areas. Surface and subsurface soil, surface water, sediment, groundwater, and debris were evaluated by collecting samples, which were submitted to the laboratory for analysis for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals. Soil samples obtained from low-lying areas were also analyzed for dioxins/furans and explosives. Human health and ecological risk assessments (ERAs) were also performed. The human health risk assessment (HHRA) evaluated analytical data from the site media for industrial use (includes industrial worker, trespasser, caretaker, student, and construction worker) exposures for current and most reasonably anticipated future land use and hypothetical residential use (adult and child resident) exposures for future land use. Based on the HHRA and ecological risk assessment, no unacceptable risks or hazards related to DoD operations exist at the TAMPEEL Site. Because the property does not pose a threat, no remedial action is warranted to ensure protection of human health and the environment. The Army has determined that No Action is protective of human health and environment for the unrestricted use scenario.

The USACE proposed the No Action decision in the Proposed Plan, which underwent a 35-day public comment period and a public meeting. One comment was received clarifying the current owner and operator of the Site. Ohio EPA concurred with the No Action decision in a letter dated 17 January 2017.

The Decision Document will be included in the Administrative Record (AR) file for the Site, which is maintained by USACE and available online (<http://www.lrl.usace.army.mil/Missions/Environmental/LordstownOrdnanceDepot>). The AR is also available at the Information Repository, located at the Warren-Trumbull County Library, Lordstown Branch, in Warren, Ohio.

Declaration

1.1 Site Name and Location

The Trumbull Area Multi-Purpose Environmental Education Laboratory Site (TAMPEEL Site), Formerly Used Defense Site (FUDS) Property Number G05OH0149-23, is located at the former Lordstown Ordnance Depot (FLOD) in Lordstown, Trumbull County, Ohio (Figure 1). The Department of Defense (DoD) owned the FLOD from 1942 to 1967, used it to transport, store, repair, and maintain military equipment and supplies, and transferred the property in 1967. As a result, the site is considered a FUDS.

A FUDS is a real property that was owned by, leased to, or otherwise possessed by the United States under DoD jurisdiction and transferred from DOD control before October 17, 1986. In accordance with Defense Environmental Restoration Program (DERP) legislation (10 USC 2701 et. seq.), the Secretary of the DoD is authorized to carry out response actions with respect to releases of hazardous substances from active installations and FUDS. Under DERP, sites follow the remedial process outlined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The United States Army Corps of Engineers (USACE) is the executing agency for purposes of implementing the FUDS program in Ohio for the DOD and works in coordination with the Ohio Environmental Protection Agency (Ohio EPA).

The TAMPEEL Site encompasses approximately 39 acres on the northwest corner of the FLOD property and was transferred by the DoD in 1967 to the Lordstown Board of Education. A year-round environmental laboratory for local school students was established at the TAMPEEL in 1973. In 2000, the educational laboratory was temporarily closed until further investigation was completed due to the concerns over waste disposal at the site. The TAMPEEL property was later leased from the Trumbull County Board of Education by a third party for horse grazing. The remainder of the FLOD property to the east was sold to the Lordstown Economic Development Corporation and subsequently developed as the Ohio Commerce Center (OCC). The entire FLOD property is zoned as Industrial (I-1) by the Village of Lordstown.

1.2 Statement of Basis and Purpose

The USACE, as the executing agency for FUDS environmental response actions at the FLOD, selected the remedial action decision, which is no action. This Decision Document is a legal document and presents the selected remedy (No Action) for the TAMPEEL Site and was prepared in accordance with *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Section Decision Documents* (United States Environmental Protection Agency [USEPA], 1999) and with the U.S. Army Corps of Engineers Engineering Regulation 200-3-1 (2004). USACE selected the No Action remedial action decision in accordance with CERCLA, as amended by the SARA, and Section 300.430(f)(2) of the NCP (40 Code of Federal Regulations, Part 300). This decision is based on information contained in the Administrative Record (AR) file for TAMPEEL Site.

USACE-Louisville District maintains the AR file, and it is available online.¹ The Information Repository is located at the Warren-Trumbull County Library, Lordstown Branch, in Warren, Ohio. Ohio EPA concurs with the selected remedial action decision.

1.3 Description of Selected Remedy

No action is warranted to ensure protection of human health and the environment because potential risks are within the acceptable range as specified in the NCP for current and reasonably foreseeable future land use. The human health risk assessment (HHRA) evaluated the industrial use (includes industrial worker, trespasser, caretaker, student, and construction worker) exposures for the current land use and industrial use (industrial worker, trespasser, caretaker, student, and construction worker) and hypothetical residential use (adult and child resident) exposures for the future land use. The HHRA evaluated chemicals detected in soil, groundwater, surface water, and sediment, as well as debris exposure scenarios (Shaw Environmental, Inc., 2005; CH2M HILL, 2011). For the ecological risk assessment (ERA) at the TAMPEEL site, both terrestrial and aquatic receptors were evaluated. Additionally, the site was found to not have any threatened or endangered species occurring or potentially occurring (Shaw Environmental, Inc., 2005). The site is unlikely to present significant risks to ecological receptors. The HHRA indicated that there were no unacceptable risks or hazards associated with environmental site media, thereby supporting unrestricted site use.

1.4 Statutory Determinations

The investigation results for the TAMPEEL Site demonstrated that the No Action remedial action decision is protective of human health and the environment. Therefore, no applicable or relevant and appropriate requirements were identified and the statutory determinations for treatment under CERCLA Section 121 are not necessary.

1.5 Authorizing Signature

The TAMPEEL Site is located in Lordstown, Trumbull County, Ohio and was transferred from DoD control prior to 17 October 1986. Therefore, the Site meets the definition of a FUDS property. This Decision Document presents the selected remedy for the Site. The USACE has the responsibility to execute the FUDS program at the FLOD and has developed this Decision Document consistent with CERCLA, as amended, and the NCP. The No Action Proposed Plan was available for a 35-day public comment period (August 1 to September 4, 2015). One comment was received during the public comment period (during the public meeting) clarifying the current owner and operator of the Site and is discussed in the Responsiveness Summary in Section 3.

This Decision Document will be incorporated into the AR file for the FLOD, which is available for public review at the Warren-Trumbull County Public Library located at 1471 Salt Springs Road, Warren, Ohio. Likewise, USACE-Louisville District maintains the AR file and it is available online.² A notice of availability of the Decision Document will be published in a local newspaper as required under the NCP.

This Decision Document, selecting No Action as the remedial action decision, is approved by the undersigned, pursuant to Memorandum, DIAM-ZA, July 29, 2016, Subject: Redelegation of

¹ <http://www.lrl.usace.army.mil/Missions/Environmental/LordstownOrdnanceDepot>

² <http://www.lrl.usace.army.mil/Missions/Environmental/LordstownOrdnanceDepot>

Assignment of Mission Execution Functions Associated with Department of Defense Lead Agent Responsibilities for Formerly Used Defense Sites Program, and to Engineer Regulation 200-3-1, FUDS Program Policy.

Approved:

David F. Dale, SES, PE, PMP
Programs Director

Date

Decision Summary

2.1 Site Name, Location, and Description

The TAMPEEL Site occupies approximately 39 acres in Lordstown, Trumbull County, Ohio. The TAMPEEL Site (FUDS Property No. G05OH0149-23) was originally part of the 564-acre FLOD, which was owned by the DoD from 1942 to 1967, at which time the DoD transferred TAMPEEL to the Lordstown Board of Education. The Site has three buildings, located roughly in the center of the Site, including one main building, a restroom building, and storage shed (Figure 2).

2.2 FUDS Program Summary

The TAMPEEL Site was located on real property that was owned by the United States (U.S.) Government and under the jurisdiction of the DoD from 1942 to 1967. Because the property was under the jurisdiction of the Secretary of Defense and transferred from DoD control prior to October 17, 1986, the TAMPEEL Site is considered a FUDS property. As a FUDS property, contamination on the property that is a result of DoD's activities is being addressed by USACE under the DERP. The USACE has conducted environmental investigations at the Site as the executing agency for DoD. The law authorizes the DoD to take remedial action at eligible FUDS properties (10 USC 2701 [c][1][B]). Environmental investigations and remediation at FUDS properties is conducted in accordance with CERCLA, SARA, and the NCP.

2.3 Site History and Enforcement Activities

The DoD owned the FLOD property from 1942 to 1967. The original property that comprised the FLOD is rectangular and occupied approximately 564 acres (Figure 1).

During the period from 1945 to 1956, the FLOD was used to store, repair, and maintain military equipment and vehicles. In 1956, this mission was terminated, and the FLOD was used to provide administrative and logistical support for the regional Nike anti-aircraft activities and logistical support for the U.S. Army Reserve. In 1963, the FLOD was placed on inactive status. In 1967, the DoD transferred 39 acres on the northwest corner of the FLOD (east of the 45 acres previously transferred) to the Lordstown Board of Education (the parcel referred to as the TAMPEEL Site). A year-round environmental laboratory for local school students was established at the TAMPEEL Site in 1973. The buildings constructed for the TAMPEEL Site are located roughly in the center of the TAMPEEL Site and consist of one main building, a restroom building, and storage shed (Figure 2). In 2000, the educational laboratory was temporarily closed until further investigation was completed due to the concerns over waste disposal at the Site. The TAMPEEL Site was later leased from the Lordstown Board of Education by a third party for horse grazing, which is the current site use.

The TAMPEEL Site was investigated for environmental impacts beginning in 1990. A suspected disposal area was investigated. However, the debris was reported to be household type waste disposed in a low-lying area, not buried, and was limited in volume. Based on historical information and observations made during investigations, there were no reports or evidence that hazardous materials were disposed in this area, either by the DoD or other parties. No other sources or releases of hazardous substance were identified on the TAMPEEL as a result of DoD activities.

Information from the investigations conducted at the TAMPEEL Site can be found in the following documents:

- *Level I Environmental Assessment of the OCC* (R&R, 1990)
- *Assessment, Industrial Park in Warren, Ohio* (CH2M HILL, 1994)
- *Final Site Investigation Report for the Former Lordstown Ordnance Depot, Ohio* (Maxim, 1997)
- *TAMPEEL Remedial Investigation Report* (Remedial Investigation [RI] Report; Shaw Environmental, Inc. 2005)
- *Final TAMPEEL Remedial Investigation Report Addendum* (RI Addendum; CH2M HILL, 2011)

No actions, Federal or State enforcement actions, lawsuits, or other pending actions apply to the TAMPEEL Site.

2.4 Community Participation

The community relations requirements were followed as described below:

- USACE-Louisville District maintains the AR file and it is available online³. In addition, an information repository has been maintained by USACE at the Warren-Trumbull County Library since 1999.
- A 35-day public comment period on the No Action Proposed Plan was solicited through a notice placed in *The Vindicator* newspaper (August 1, 2015). One comment was received during the public meeting clarifying the current owner and operator of the Site.
- A public meeting was held at the Warren-Trumbull County Main Library on August 18, 2015. The Responsiveness Summary of this Decision Document notes the comment that was received during the public meeting.

2.5 Scope and Role of Remedial Action

The USACE serves as DoD's executing agent for cleanup of FUDS properties nationwide. The USACE-Louisville District is responsible for the environmental restoration program at the TAMPEEL Site. This Decision Document addresses the TAMPEEL Site only and selects the final, comprehensive response for all environmental media at the TAMPEEL Site; it does not include or directly affect any other areas of concern at the FLOD.

2.6 Site Characteristics

This section briefly summarizes the geology, hydrogeology, hydrology, and nature and extent of contamination at the site. There are no known archeological or historical landmarks at the site.

2.6.1 Geology, Hydrogeology, and Groundwater Use

Geologically, the TAMPEEL Site is underlain by 2 to 12 feet of clay-rich soil overlying bedrock. Sandstone bedrock is directly beneath the soils in the southern and western portions of the TAMPEEL Site, and shale bedrock underlies the soils in the northern and eastern portions.

³ <http://www.lrl.usace.army.mil/Missions/Environmental/LordstownOrdnanceDepot>

Groundwater occurs under confined conditions in bedrock; the clayey soil overlying bedrock forms the confining layer. The depth to water ranges from about 2 to 7 feet below ground surface and flows to the northeast at the TAMPEEL Site. Groundwater also discharges to the ground surface at the TAMPEEL Spring, which is south of the Study Pond in the northern part of the TAMPEEL Site. The TAMPEEL Site contains several surface water bodies, including Study Pond, Beaver Pond, Beaver Creek, Aspen Creek, and TAMPEEL Spring. Beaver and Aspen Creeks generally flow to the northeast.

Ohio Department of Natural Resources records indicate that approximately 17 wells, installed between 1942 and 1971, were recorded within 0.5 mile of the Site. The depth of the wells varied between 50 feet and 152 feet. Water supplies for Lordstown Township are derived from Meander Lake, which is located approximately 17,000 feet to the southeast of the FLOD. The Lordstown Water Commissioner indicated that residents in the area of FLOD are supplied with city water (Maxim, 1997), however, the existence and use of the private wells was not independently verified.

2.6.2 Nature and Extent of Site Contamination

USACE conducted the RI between 1998 and 2011 to characterize the nature and extent of environmental contamination, to assess risks to human health and the environment and to provide data to develop, evaluate, and select appropriate remedial actions to mitigate adverse effects, if required. Surface and subsurface soil samples were collected onsite and surface water and sediment samples were collected from the ponds, streams, and the spring. Groundwater monitoring wells were installed and samples were collected to determine groundwater aquifer conditions. In addition, a suspected disposal area was investigated as part of the RI. The investigation confirmed that there was formerly a disposal area located in the vicinity of the nature center buildings. However, the debris was reported to be household type waste disposed in a low-lying area, not buried, and was limited in volume. In 1970, this volume was reduced during a cleanup by volunteers for the school system. Subsequent to the 1970 cleanup efforts, slag was obtained from a third party and placed over the debris to create a parking lot for the nature center. The remaining debris was observed during test pitting/trenching to consist of scrap metal (nails, metal chains, and wire), glass, tin cans, and scrap wood. Based on historical information and observations made during test pitting/trenching, there were no reports or evidence that hazardous materials were disposed in this area, either by the DoD or local residents. Therefore, waste remaining under the parking lot is not considered a source area. In addition, a methane gas survey was completed over the suspected disposal pile. No other sources or releases of hazardous substance were identified on the TAMPEEL as a result of DoD activities. Detailed information can be found in the RI Report (Shaw Environmental, Inc., 2005) and the RI Addendum (CH2M HILL, 2011).

Surface soil, subsurface soil, surface water, sediment, and groundwater samples were submitted to the laboratory for analysis for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals. Soil samples obtained from the low-lying areas were also analyzed for dioxins/furans and explosives. (The sampling locations and analytical results are presented in the RI Report [Shaw Environmental, Inc., 2005] and RI Addendum [CH2M HILL, 2011].)

Laboratory analytical results for the environmental samples were compared with human health screening levels established by the USEPA, called Preliminary Remediation Goals (PRGs); soil and sediment samples were compared with residential soil PRGs and groundwater and surface water samples were compared with Maximum Contaminant Levels (MCLs) and USEPA Region 9 Tap

Water PRGs. The surface water sample analytical results were compared with human health screening levels (MCLs and Tap Water PRGs) and ecological screening levels (the National Ambient Water Quality Criteria for Aquatic Life).

2.6.2.1 Soil and Sediment

Some metals, SVOCs, pesticides, and dioxins/furans were detected in soil samples at concentrations exceeding the residential PRGs. For the industrial scenario, the risk estimates were within USEPA acceptable levels and, therefore, no industrial PRGs were calculated.

Some metals, SVOCs, and pesticides were detected in sediment samples at concentrations exceeding the residential PRGs. Because the sediment risk estimates were within USEPA acceptable levels no remedial action is needed for sediment.

2.6.2.2 Surface Water and Groundwater

Some metals and only one VOC, vinyl chloride, were detected in surface water samples at concentrations exceeding USEPA Region 9 tap water PRG or tap water regional screening levels. The vinyl chloride exceedances occurred in two of the four quarterly samples collected from Aspen Creek, and the detections were only slightly higher than the screening level.

There were no exceedances in groundwater samples except for thallium (one time in one well) and iron, which exceeded the Secondary MCLs, a non-mandatory level, established for aesthetic reasons.

2.6.2.3 Suspected Disposal Area

Additional assessment of the suspected disposal area was conducted in 2007. The investigation confirmed that there was formerly a disposal area located in the vicinity of the nature center buildings. However, the debris was reported to be household type waste disposed in a low-lying area, not buried, and was limited in volume (approximately 5 feet high, 75 feet long, and 50 feet wide). Volunteers removed two-thirds to three-fourths of the debris from the site using a front-end loader and several dump trucks on the original Earth Day (April 22, 1970). Near the end of the day, the larger debris remaining in the area was scattered in the woods to the east. Small debris was left in place and slag (a byproduct of smelting ore) was obtained from a local manufacturer and placed along what became an access road and parking area near the main building. Subsequent to the 1970 cleanup efforts, slag was placed over the debris to create a parking lot for the nature center.

Geophysical survey measurements were taken, and trenches were excavated to refine the limits of the debris beneath the slag. The 2007 geophysical survey indicated an anomaly approximately 25 feet wide located between the restroom building and the storage shed on the eastern side of the TAMPEEL Site. Two trenches were completed within and near the limits of the identified geophysical anomaly to provide a representative sample of the characteristics of the material within the limits of the anomaly and determine the accuracy of geophysical investigation limits. The trenching revealed debris such as wire, tin cans, glass, nails, metal chains, slag, and minimal scrap wood. The trench excavations provided no evidence of chemical containers (for example, drums). Based on historical information and observations made during test pitting/trenching, there were no reports or evidence that hazardous materials were disposed in this area, either by the DoD or local residents. Therefore, waste remaining is not considered a source area.

Additionally, the former surface disposal was sampled for the presence of methane gas, which is a byproduct of organic waste decomposition and an indicator to the presence of waste. No methane gas was found as would be expected from organic waste, which further supported the theory that

the material is most likely metals consistent with the trenching observations and personal interview (Bell personal communication, 2007).

2.6.2.4 Chemicals of Potential Concern

Chemicals of potential concern (COPC) identified at the TAMPEEL Site and further evaluated in the risk assessments included aluminum, arsenic, barium, chromium, iron, lead, manganese, nickel, thallium, vanadium, zinc, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, ideno(1,2,3-CD)pyrene, dibenz(a,h)anthracene, pesticides, dioxins/furans, methylene chloride, and vinyl chloride.

2.7 Current and Potential Future Site and Resource Uses

The area surrounding the TAMPEEL Site is residential and industrial. The TAMPEEL Site is zoned industrial and is currently used for horse grazing. Previously, the Site was developed for use as an environmental educational laboratory, but was also used for occasional horse grazing. The reasonably anticipated future use is as another environmental educational laboratory. The possible future use could also be recreational.

2.8 Site Risks

This section presents an overview of the risks associated with the current and future use of the Site; the reasonably anticipated future use is an environmental educational laboratory (that is, industrial use). However, the human health risk was evaluated for both industrial and residential use, the latter in order to evaluate the unrestricted use and unlimited exposure scenario. Risks were evaluated separately for human health and ecological populations (plants and animals) at the Site. A detailed discussion of potential risks at the Site and the risk evaluation process is in the RI Report (Shaw Environmental, Inc., 2005) and the RI Addendum (CH2M HILL, 2011).

2.8.1 Human Health Risk

The USACE conducted a HHRA to evaluate potential risks and hazards to humans at the TAMPEEL Site. The HHRA was prepared following USEPA guidance (including Risk Assessment Guidance for Superfund Parts A and B [USEPA, 1989 and 1991]), as well as Ohio EPA guidance. The HHRA evaluated the detected concentrations found during the investigations in Site soil, groundwater, surface water (in the Aspen Creek/TAMPEEL Spring, Beaver Pond, and Study Pond), and sediment (in the Aspen Creek/TAMPEEL Spring, Beaver Pond, and Study Pond). Soil and sediment sampling results were compared with residential soil PRGs, and detected concentrations in groundwater and surface water were compared to MCLs and Tap Water PRGs (although Site groundwater is not used as a drinking water resource) to identify COPCs (the detected contaminants most likely to pose the greatest threat to humans).

The HHRA also considered the people who could come in contact with the detected chemicals found at the TAMPEEL Site. It evaluates potential risk to people currently using the Site and to those who might use it in the future. The TAMPEEL Site is zoned industrial and has been developed for use as an environmental educational laboratory but has also been used for occasional horse grazing. Therefore, the types of people evaluated included TAMPEEL caretakers, students, trespassers, industrial workers, construction workers, and hypothetical future residents. The reasonably foreseeable future Site use is for educational purposes. The possible future Site use could also be recreational or industrial. Therefore, future Site receptors are expected to be caretakers, students, and construction workers (if buildings are constructed on Site).

The HHRA then considered the different ways that people might come in contact with the detected chemicals, known as exposure pathways. Under current land use conditions, the exposure pathways evaluated were industrial worker exposures to surface soil; trespasser, TAMPEEL caretaker, and TAMPEEL student exposures to surface soil, sediment, and surface water; and construction worker exposures to surface soil and subsurface soil combined, sediment, surface water, and groundwater. Under future land use conditions, industrial worker, trespasser, TAMPEEL caretaker, TAMPEEL student, and construction worker exposures were evaluated as a conservative approach, assuming that future exposures are related to environmental educational laboratory use is more realistic. The future land use condition also included evaluation of hypothetical adult resident and child resident exposures to surface soil, total soil, sediment, surface water, and groundwater.

Based on the review of data and exposure pathways, the HHRA evaluated two types of risk: cancer risk and non-cancer hazard. For cancer risk, the likelihood of cancer resulting from a 30-year exposure to Site contaminants generally is expressed as an upper-bound probability; for example, a 1-in-10,000 chance. In the United States, the “background” risk of developing cancer is about a 1 in 2 for men (American Cancer Society, 2014). An incremental increase of cancer expressed at 1 in 10,000 (1×10^{-4}) would equate to the same man having a cancer risk of 1 in 2.0001. Non-cancer hazard is expressed in a hazard index (HI). The key concept is that a threshold level (measured as an HI of 1) exists, at or below which adverse, non-cancer health effects are not likely to occur.

USACE uses the USEPA's acceptable risk range (1×10^{-4} to 1×10^{-6}) and non-cancer HI threshold of 1 for CERCLA sites when making risk-based decisions. However, Ohio EPA's target ELCR level is 1 in 100,000 (or 1×10^{-5}) and non-cancer HI threshold of 1 (Ohio EPA, 2009). The HHRA results are discussed in the subsections below.

2.8.1.1 Soil

The HHRA from the 2005 RI Report identified metals, SVOCs, pesticides, and dioxins/furans as COPCs for surface soil and total soil (Shaw Environmental, Inc., 2005). The HHRA concluded that the potential excess lifetime cancer risk (ELCR) for exposure to surface soil and total soil was within the USEPA's acceptable risk range for all current and future receptors. The risk level was equal to or below the Ohio EPA target ELCR level of 10^{-5} for receptors, except for the hypothetical adult resident and child resident. The greatest contributor of ELCR exceedances for the hypothetical adult resident and child resident is arsenic. However, the representative concentration calculated in the risk assessment was below the calculated background (naturally occurring) concentration.

The estimated non-cancer HI for exposure to surface soil and total soil (surface and subsurface combined) did not exceed USEPA's and Ohio EPA's threshold (HI=1) for all receptors, with the exception of the hypothetical future child resident exposure scenario. The greatest contributions to the HI were from iron and manganese. However, the exposure point concentrations were below the U.S. Department of Agriculture recommended daily allowance (RDA) for manganese and iron.

2.8.1.2 Surface Water

The HHRA evaluated potential exposures to surface water in Aspen Creek, TAMPEEL Spring, Beaver Pond, and Study Pond. The HHRA from the 2005 RI Report identified metals and VOCs as COPCs for surface water (Shaw Environmental, Inc., 2005). The ELCR and non-cancer HI estimates were within the USEPA acceptable risk range ELCR (1×10^{-4} to 1×10^{-6}) and less than USEPA's threshold (HI=1) for all receptors evaluated (that is, trespassers, caretakers, students, construction workers, and

hypothetical residents). The ELCR and non-cancer HI estimates for exposure to surface water in these water bodies were also less than the Ohio EPA target level of 10^{-5} and threshold (HI=1).

In 2007 and 2008, additional samples were collected from Aspen Creek and TAMPEEL Spring. Iron and several VOCs were detected in the surface water. Based on screening of the 2007 and 2008 data and supplemental risk calculations, the 2005 RI Report conclusions regarding potential human health risks associated with the surface water of Aspen Creek and TAMPEEL Spring were still valid (that is, ELCR estimates were within the USEPA's acceptable risk range, did not exceed the USEPA non-cancer hazard threshold for HI, and were below the Ohio EPA's target ELCR level of 10^{-5} and threshold HI of 1 [Shaw Environmental, Inc., 2005]).

2.8.1.3 Sediment

Potential sediment exposures were evaluated for Aspen Creek, TAMPEEL Spring, Beaver Pond, and Study Pond. The HHRA from the 2005 RI Report identified metals and SVOCs as COPCs for sediment (Shaw Environmental, Inc., 2005). The ELCR and non-cancer HI estimates for sediment in these water bodies were within USEPA's acceptable risk range, below Ohio EPA's target ELCR level of 10^{-5} , and did not exceed the USEPA and Ohio EPA threshold for HI for the receptors evaluated (that is, trespassers, caretakers, students, construction workers, and hypothetical residents).

2.8.1.4 Groundwater

The HHRA from the 2005 RI Report (Shaw Environmental, Inc., 2005) and 2011 RI Addendum (CH2M HILL, 2011) identified two VOCs (methylene chloride and vinyl chloride) and metals as COPCs in groundwater. The HHRA concluded that the ELCR for groundwater was within the USEPA's acceptable risk range and below the Ohio EPA's target ELCR level of 10^{-5} for the receptors.

The estimated non-cancer HI for exposure to groundwater exceeded the USEPA and Ohio EPA threshold HI of 1 for the adult resident and the child resident exposure scenarios. The primary drivers were iron and thallium. However, the exposure point concentration for iron was below the RDA level, and thallium was detected only once (in 2000) in one well. Thallium was not detected in any well during the quarterly monitoring between December 2007 and September 2008.

2.8.1.5 Suspected Disposal Area

Miscellaneous debris was reportedly disposed of on the surface in a low-lying area on the TAMPEEL Site (CH2M HILL, 2011). Based on first-hand account, the debris was approximately 5 feet high, 75 feet long (running north and south), and 50 feet wide. The remaining debris, identified and observed by representatives of the Ohio EPA and USACE during trenching in 2007, consisted of primarily wire, tin cans, glass, nails, metal chains, slag, and scrap wood with no indications of chemical containers or other sources of VOCs and SVOCs. The slag is expected to contain various metals and may be at least partially responsible for the concentrations of metals detected in soil samples collected in the area where the slag was placed. Subsequent to DOD operations and control, slag from a local manufacturer was placed along what became an access road and parking area near the main building of the TAMPEEL Site.

The results from the methane gas survey over the anomaly indicated that methane gas was not present. The absence of methane gas demonstrates that the entire anomaly is most likely consistent with the representative characterization of the material being inorganic metals. Based on the limited quantity of waste observed, waste reported as household generated wastes (consistent with test pit material identification), surface deposit only, representative test pit characterization of waste to be metallic objects, no methane gas present, no risk to receptors

exposed to the debris was identified. Therefore, potential exposures to debris were not evaluated quantitatively in the HHRA.

2.8.1.6 Summary

The HHRA completed for the Site indicates there are no unacceptable risks associated with the environmental media for the unrestricted use scenario. The HHRA evaluated the industrial use (includes industrial worker, trespasser, caretaker, student, and construction worker) exposures for the current land use and industrial use (industrial worker, trespasser, caretaker, student, and construction worker) and hypothetical residential use (adult and child resident) exposures for the future land use. The HHRA evaluated chemicals detected in soil, groundwater, surface water, and sediment, as well as debris exposure scenarios (Shaw Environmental, Inc., 2005; CH2M HILL, 2011).

2.8.2 Ecological Risk

During the 2005 RI, a review of the Natural Heritage maps and files found no records of rare or endangered species in the FLOD, including a 1-mile radius of the property. An ERA was conducted during the RI and supplemental RI to evaluate the potential for risks to terrestrial and aquatic receptors (plants and animals) at the Site. The ERA was conducted in accordance with guidelines set forth in the Tri-Service Procedural Guidelines for Ecological Risk Assessments (Wentsel et al., 1996). Additional guidance sources included: Framework for Ecological Risk Assessment (USEPA, 1992), Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (USEPA, 1997), and Risk Assessment Handbook, Volume II: Environmental Evaluation (USACE, 1996).

Ecological exposure pathways may be direct or indirect. Direct exposure pathways include dermal (skin) contact, absorption, inhalation, and ingestion (eating or drinking). Examples of direct exposure include animals incidentally ingesting contaminated soil or sediment (such as during burrowing or dust-bathing activities); animals ingesting surface water; plants absorbing contaminants by uptake from contaminated sediment or soil; and the dermal contact of aquatic organisms with contaminated surface water or sediment. Indirect exposure pathways involve the ingestion of chemicals by a predator that have accumulated in prey.

Both terrestrial and aquatic receptors were identified for evaluation at the TAMPEEL Site. These receptors were selected as indicators of the overall potential for adverse effects to the ecosystem since they represent the bottom of the food chain (Shaw Environmental, Inc., 2005). The six terrestrial receptors evaluated include the deer mouse, short-tailed shrew, eastern cottontail rabbit, red fox, American robin, and red-tailed hawk. The aquatic receptors include water-dwelling aquatic life (such as fish), benthic invertebrates, and aquatic-foraging wildlife, such as great blue heron and beaver. Hazards to aquatic life and benthic invertebrates were evaluated based on direct exposure to surface water and sediment, while hazards to terrestrial and aquatic-foraging wildlife were evaluated based on the ingestion of contaminants accumulated in prey and via the direct ingestions of abiotic media (for example, water or soil).

2.8.2.1 Soil

Contaminants in surface soils are estimated to represent the greatest ecological concern, especially for sensitive insectivorous receptors such as the shrew and to a lesser extent to the deer mouse, cottontail, robin, and red fox. These potential risks are due to elevated levels of metals, including aluminum, barium, arsenic, zinc, and chromium in soils. Also at risk is the American robin due to dichlorodiphenyltrichloroethane (DDT) in soil. However, the levels of DDT detected on the Site have been found to be consistent with historical agricultural application. Aluminum in sediment at these

water bodies (Beaver Pond, Aspen Creek, and Study Pond) is within or similar to soil background concentrations. In addition, if soil pH is greater than 5.5, the aluminum would not be bioavailable and therefore would not constitute an ecological risk. Sediment sample pH values were not obtained for this investigation; however, the associated pH values for co-located surface water samples for Beaver Pond (pH values of 7.18, 7.57, 8.67, and 8.62) all exceeded the soil pH criteria of 5.5. Likewise, the surface water pH values for the Study Pond (pH values of 7.40, 8.28, and 8.95) also exceeded the soil pH criteria of 5.5. The above information supports consideration of eliminating aluminum in sediment as a COPC for the ecological risk assessment. Also, field observations have not noted any overt signs of toxicity in the habitats in and around the TAMPEEL Site. The RI concluded these ecological risks were acceptable (Shaw Environmental, Inc., 2005).

2.8.2.2 Surface Water

There are no significant risks to aquatic life from exposure to contaminants in the TAMPEEL Site surface water. In 2007 and 2008, additional samples were collected from Aspen Creek and TAMPEEL Spring. The samples were analyzed for iron, thallium, and VOCs. Results of the additional screening in 2007 and 2008 are consistent with the 2005 RI Report conclusions and indicate no potential ecological risks for most receptors associated with Aspen Creek and TAMPEEL Spring surface water. Potential risks were initially identified for the great blue heron due to elevated levels of zinc in Aspen Creek surface water and aluminum in Beaver Pond surface water. However, the 2005 RI Report also noted that whether significant populations actually reside in Aspen Creek is unknown because it is relatively isolated from other surface water bodies (Shaw Environmental, Inc., 2005). In addition, zinc was only detected infrequently in surface water. Zinc was not detected in surface water in Study Pond or Beaver Pond and only detected in two of six surface water samples from Aspen Creek; only one of the two detections was above the ecological screening level. Herons are mobile predators and are only likely to obtain a limited portion of their diet from a small drainage like Aspen Creek. Based on the mobility of heron, limited food resources likely to be available to heron in Aspen Creek, and isolated nature of zinc in surface water, it is considered reasonable that the risks are generally acceptable for fish and wildlife potentially exposed to Site surface water. As indicated in the 2005 RI Report, aluminum is not bioavailable at pH above 5.5, which is the condition expected to be present on this Site, and onsite concentrations in soils are similar to those detected in non-Site-impacted soils (Shaw Environmental, Inc., 2005). As noted in the RI report, Aspen Creek is relatively isolated, with limited habitat particularly during low-flow conditions. Therefore, based on screening of the 2007 and 2008 data, the RI report (Shaw Environmental, Inc., 2005) conclusions regarding potential ecological risks associated with Aspen Creek/TAMPEEL Spring surface water are still valid.

2.8.2.3 Sediment

No significant risk is associated with benthic invertebrates or aquatic wildlife from exposure to contaminants in sediment at Aspen Creek, Beaver Pond, or Study Pond. Sediments are predicted to be a significant ecological concern for the great blue heron and the beaver due to the estimated intake of DDT, its metabolites, aluminum, and to a lesser extent, arsenic. No sediment background data were available; therefore, soil background data were used to evaluate sediment concentrations. Although some uncertainties are associated with this comparison, soil represents a reasonable proxy for inorganic chemical concentrations in the absence of sediment reference samples give the similarity of these media. The aluminum in sediment at the Beaver Pond, Aspen Creek, and Study Pond is within or similar to soil background concentrations. It is also noted that

the DDT detections reflect historical Site application and do not reflect a release associated with DoD activities; therefore, are not subject to further evaluation under FUDS.

2.8.2.4 Debris

As noted earlier, there is no evidence to suggest that the disposed debris is a source of contamination based on observations of the materials, soil sampling results from the area, and photoionization detector readings. Therefore, potential exposure to debris was not evaluated quantitatively in the RI.

2.9 Documentation of Significant Changes

This Decision Document contains no significant changes from the proposed plan.

SECTION 3

Responsiveness Summary

The Proposed Plan was available for a 35-day public comment period (August 1 to September 4, 2015) in accordance with the NCP, which requires that the public comment period is no less than 30 days. No written comments were received during the public comment period. One comment was received during the public meeting (August 18, 2015).

3.1 Stakeholder Comments and Executing Agency Responses

One comment was received during the 35-day public comment period (during the public meeting):

The Proposed Plan states Trumbull County Board of Education owned and later leased the property; however it was stated Trumbull County Board of Education was never the owner of the site and that Lordstown Board of Education was the owner and it was turned over to Trumbull County Board of Education for operation. In addition, the property was later leased from Lordstown Board of Education, not Trumbull County Board of Education, for horse grazing.

USACE response:

The Decision Document updated this information from the Proposed Plan.

3.2 Technical and Legal Issues

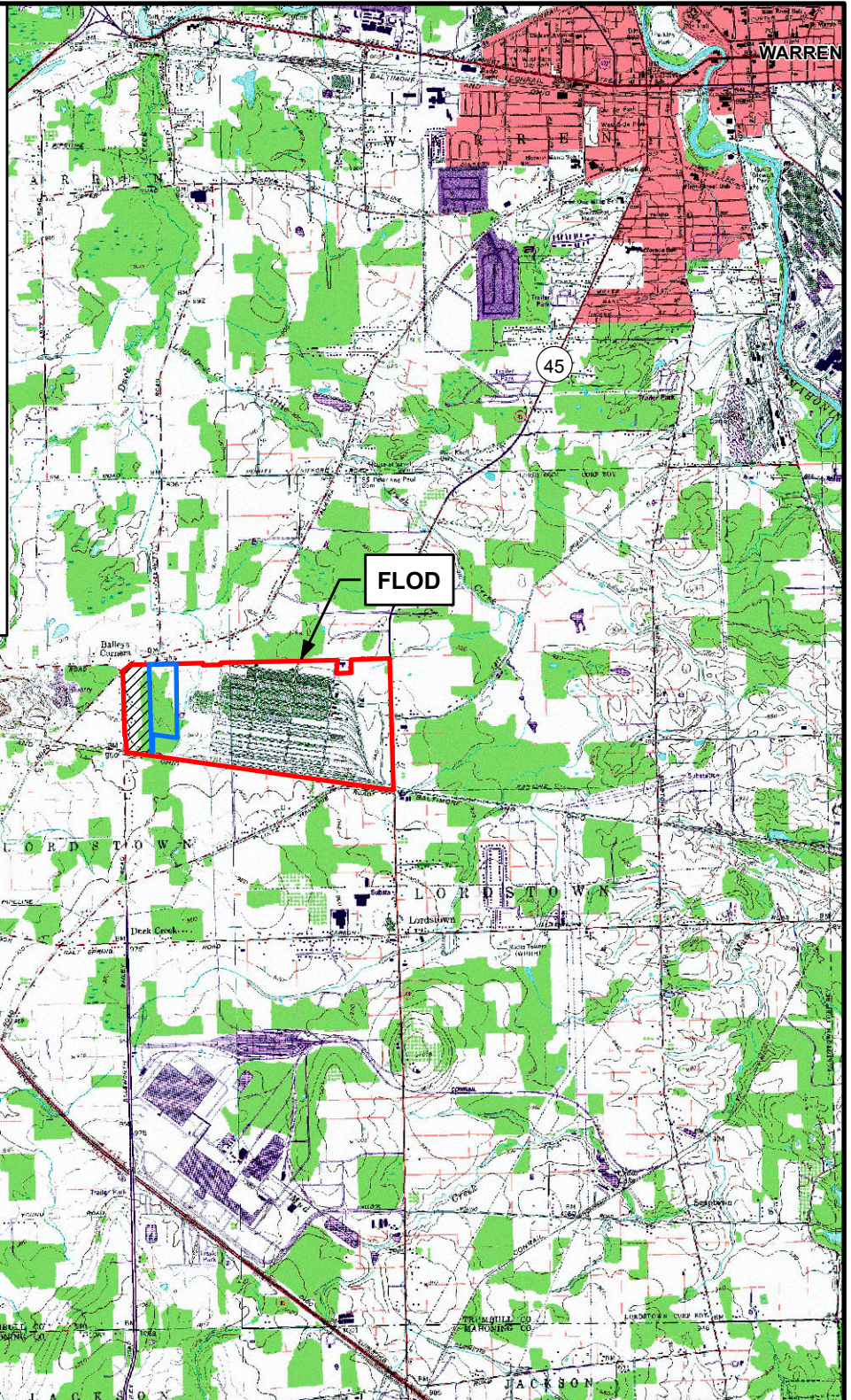
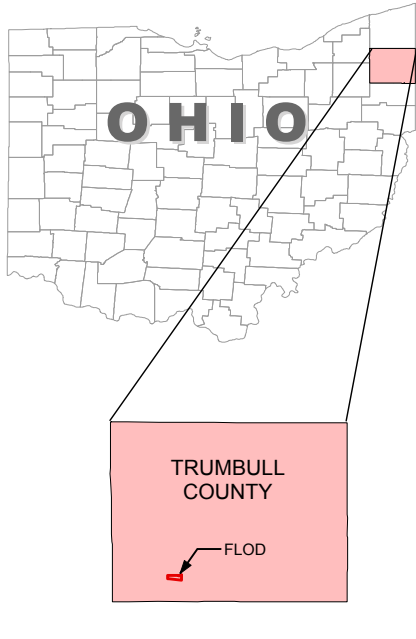
There were no technical or legal issues regarding the No Action decision at the TAMPEEL Site.

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Figures

COUNTY INDEX MAP



NOTES:

1. FLOD = FORMER LORDSTOWN ORDNANCE DEPOT (565 ACRES)
2. TAMPEEL = TRUMBULL AREA MULTI-PURPOSE ENVIRONMENTAL EDUCATION LABORATORY (APPROXIMATELY 39 ACRES)

LEGEND

- FLOD
- FLOD PROPERTY SURPLUSED IN 1945
- TAMPEEL

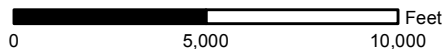
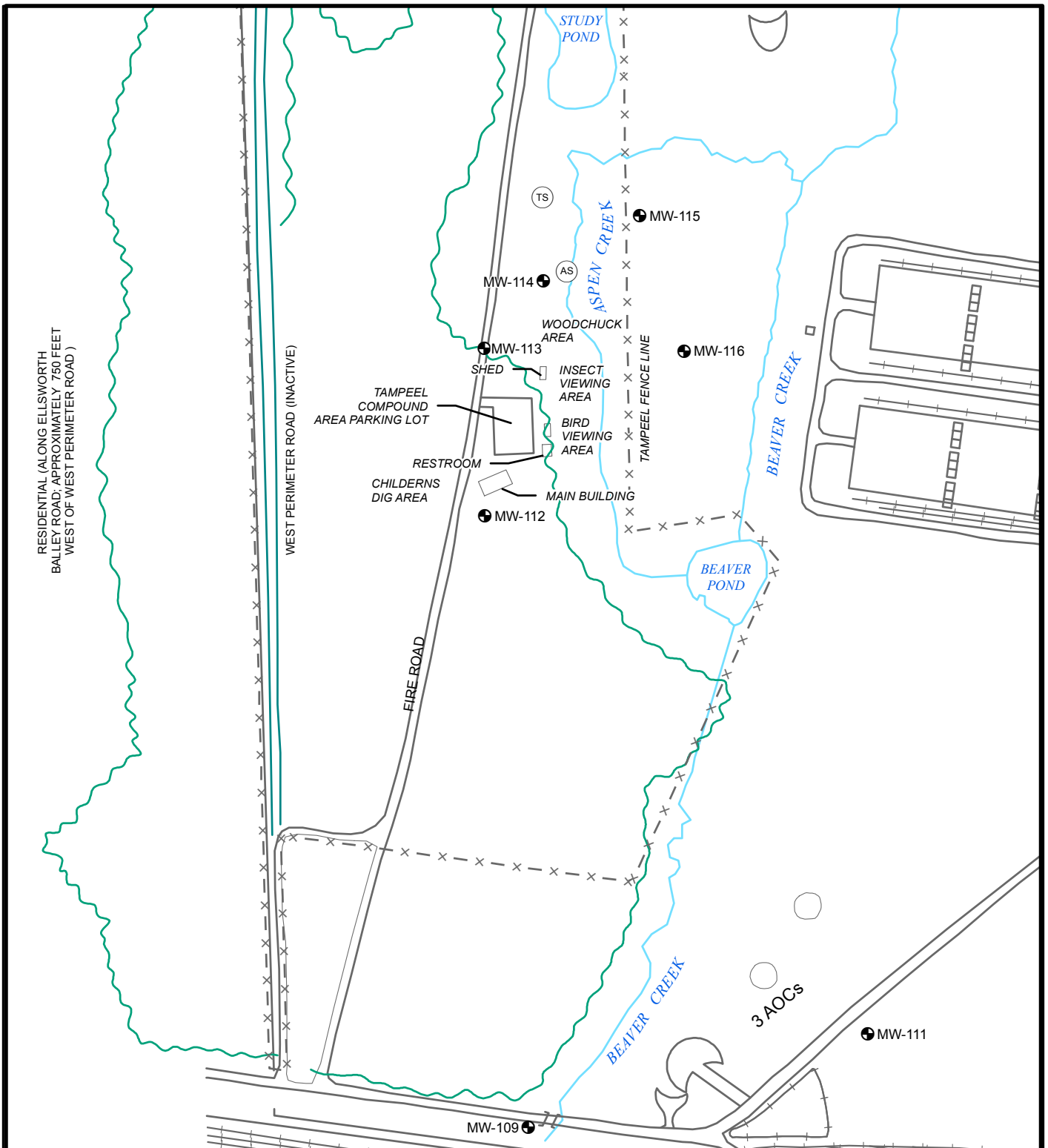
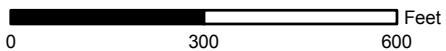


FIGURE 1
SITE LOCATION MAP
 TAMPEEL DECISION DOCUMENT
 FORMER LORDSTOWN ORDNANCE DEPOT
 LORDSTOWN, OHIO



LEGEND

- MONITORING WELL
- Ⓐ ASPEN CREEK SURFACE WATER SAMPLE LOCATION
- Ⓙ TAMPEEL SPRING SURFACE WATER SAMPLE LOCATION
- ~ VEGETATION
- x- TAMPEEL FENCE LINE



**FIGURE 2
SITE LAYOUT**

TAMPEEL DECISION DOCUMENT
FORMER LORDSTOWN ORDNANCE DEPOT
LORDSTOWN, OHIO