VISION PLAN

Iowa Army Ammunition Plant

Project Proponent:

Army Materiel Command

Project Manager:

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US Army Corps of Engineers

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EXECUTIVE SUMMARY

The Vision Plan is a critical step towards creating an overall, comprehensive and flexible real property master plan. The intent of the Vision Plan is to provide a flexible guideline for future development as commanders, stakeholders and missions change through the years. The planning team is aware of the challenges between a community approach and installation mission requirements. By considering both current and anticipated mission requirements, the Vision Plan strives to provide the foundation and vision needed for the development of holistic, compliant, realistic, and executable planning actions now and through the long-range, looking outward 30+ years in the future.

Stakeholder involvement is essential in the Vision Plan process because it engages and incorporates the thoughts and ideas of those directly involved in carrying out the mission. This greatly contributes to the applicability and longevity of the plan. Common themes and design challenges were established early in the planning process through stakeholder interviews.

KEY CONSIDERATIONS

- Many buildings are at the end of their life cycle and are not expected to endure the next 20 years.
- IAAAP has a large land area, providing flexibility in future mission changes, expansions, or contractions.
- 22% of the buildings on-site are vacant; many others are underutilized.
- Inefficiencies currently exist as a result of incompatible use locations and adjacencies.

Approximately 24 stakeholders participated in the Iowa Army Ammunition Plant (IAAAP) Vision Plan Workshop held 13-14 December 2016. During the Workshop, with the leadership of a planning team, stakeholders who live in the community and work at the installation developed a planning vision, defined goals and created complementary design language that addresses key planning issues. The resulting planning vision, design principles, and framework plan serve as a guide for future master planning efforts.

Iowa Army Ammunition Plant. Courtesy of Google.

The planning vision, shown below, and supporting goals and objectives were designed by stakeholders to guide development actions in order to meet the desired future state of installation facilities and infrastructure into the long-range.

IAAAP REAL PROPERTY PLANNING VISION

Iowa Army Ammunition Plant will be the center of excellence for medium and large caliber munitions design and production for the Warfighter by developing **efficient and flexible facilities and infrastructure** capable of **adapting and scaling** to changing market demand in both peace and war time. IAAAP will develop a **safe**, **secure**, **modern** and **process-driven industrial core** through strategic facility layout and utilizing innovative technologies. IAAAP will strive to cultivate pride in its workforce and community by implementing **user-focused**, **quality design** and development practices.

The planning goals and objectives listed below were developed by the stakeholders through multiple collaborative exercises performed during the Vision Planning Workshop. The planning objectives establish a common design theme that will be used to guide area development planning at the installation. Stakeholders reviewed UFC 2-100-01, Installation Master Planning, to discuss planning objectives related to each of the real property planning goals identified in the visioning exercise.

GOAL 1: SAFE AND SECURE

Safety and security should be maintained through both formal and informal means.

- Maintain workplace safety through facilities maintenance and modernization and implementing effective policies and procedures. Lighting, visibility, and overall maintenance should be enhanced so personnel feel safe when on-site.
- Identify and eliminate security vulnerabilities to protect against outside threats.
- Implement functional redundancies for utilities to safeguard against unforeseen events and ensure energy security.
- Identify existing facilities that do not comply with Crime Prevention through Environmental Design (CPTED) criteria—such as clear sight lines and defensible space—and pursue design interventions to improve safety conditions.
- Eliminate Anti-Terrorism/Force Protection (AT/FP) vulnerabilities caused by inadequate stand-offs between buildings, parking, and roadways.

GOAL 2: ADAPTING AND SCALING

Procedures and facilities should be enhanced or designed to be agile and responsive to changes in mission or production levels, without adversely impacting cost or product quality.

- Plan new or retrofit existing facilities to accommodate significant increases or decreases to work production or new missions.
- Maintain design and planning consistency and ensure new facilities support both the current mission and long-term development vision.
- Monitor industry changes, new technologies and protocol, and actively identify existing facilities capable of adapting to anticipated future requirements.

GOAL 3: EFFICIENT AND FLEXIBLE FACILITIES AND INFRASTRUCTURE

Providing the opportunity for efficient use of the built environment allows for a streamlined process that minimizes unnecessary space and costs. Additionally, facilities and infrastructure should be flexible enough to effectively respond to changes in production.

- Rebuild/renovate current facilities to withstand the 20-year outlook through segmented modernization projects.
- Repair and upgrade aged sewer system infrastructure.
- Design facilities with flexibility to meet changing demand or support new missions.
- Explore new manufacturing layouts to consolidate functions and generate additional capacity.

GOAL 4: MODERN

Buildings and infrastructure should utilize modern technology and design. Leadership should ensure processes and procedures employ modern practices.

- Identify strategic, efficiency-driven target areas for equipment modernization.
- Maximize facilities recapitalization through Production Based Support (PBS).
- Conduct pavement condition study to identify vulnerabilities in pavements.

GOAL 5: PROCESS-DRIVEN INDUSTRIAL CORE

Future development should support IAAAP's industrial process. Enhanced efficiency and effectiveness in production, storage, and testing operations should drive facility and infrastructure changes.

- Identify locational incompatibilities within existing facility layout. Identify necessary steps to relocate incompatible uses.
- Identify where new technologies or procedures could improve circulation of on-site materiel.

GOAL 6: USER-FOCUSED, QUALITY DESIGN

Processes, products, facilities, and infrastructure should be designed to preserve and enhance quality, as measured by its value to the user.

- Develop target FYs for repair or replacement of poor condition facilities.
- For current products, evaluate feasibility of and return on investment (ROI) for complete in-house production.

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1 INTRODUCTION

1.1 PURPOSE

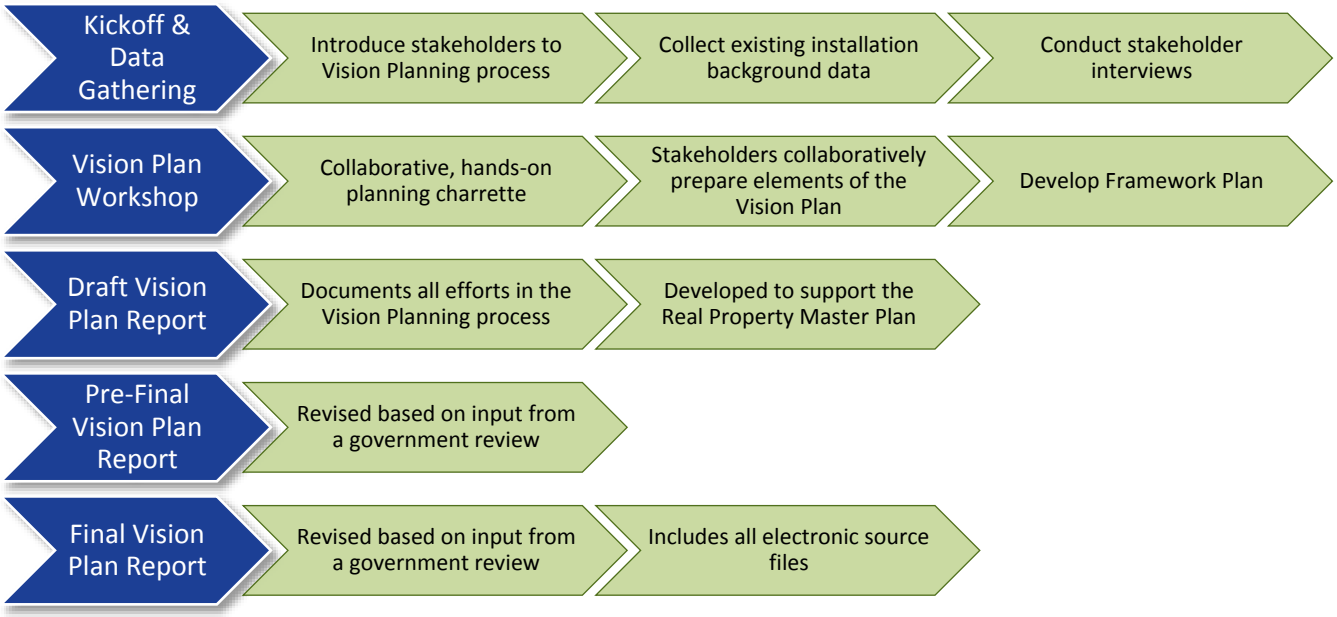
Within the framework of the Installation Master Planning process as defined in UFC 2-100-01, updated 15 May 2012, the purpose of the Vision Plan is to prepare the foundation for detailed planning through identification of a planning vision, specific goals that support that vision, and measurable planning objectives that support one or more goals.

A vision for real property planning differs from an overall installation vision in that it defines ideal development principles for maximizing the installation's long-term capabilities. Additionally, the planning team is aware of the challenges between a community approach and installation mission requirements. By considering both current and anticipated mission requirements, the Vision Plan strives to provide the foundation and vision needed for the development of holistic, compliant, realistic, and executable planning actions now and through the long-range, looking outward 30+ years in the future.

1.2 PROCESS

The Vision Plan is developed through a community approach and is based on research and institutional knowledge gained through intensive data gathering and analysis. The planning process consists of several tasks summarized in Figure 1-1.

FIGURE 1-1: VISION PLANNING PROCESS



1.3 STRATEGIC VISION, GOALS, AND OBJECTIVES

1.3.1 ARMY MATERIEL COMMAND MISSION

AMC develops and delivers global readiness solutions to sustain Unified Land Operations, anytime, anywhere.

1.3.2 ARMY MATERIEL COMMAND VISION

The Premier Provider of Army and Joint Readiness to Sustain the Strength of the Nation.

1.3.3 ARMY MATERIEL COMMAND GOALS AND OBJECTIVES

- Provide and support life-cycle management and a focused acquisition process that meets warfighter needs and reduces sustainment costs.
- Provide capabilities and capacities to equip, sustain, and expand the total force to dominate in the land domain.
- Provide seamless integration of all networks.
- Identify critical depot and arsenal manufacturing competencies and capabilities needed for future sustainment.
- Continue development of the Industrial Base integration strategies.
- Optimize energy usage.
- Provide responsive contracting support to the force.
- Ensure AMC personnel, capabilities and structure enable readiness and sustainment of the future force.

1.3.4 JOINT MUNITIONS COMMAND MISSION

JMC's mission is to provide Joint Forces with ready, reliable, lethal munitions at the right place and time to sustain global operations. JMC's core competencies are to produce, store, distribute and demilitarize ammunition.

1.3.5 JOINT MUNITIONS COMMAND VISION

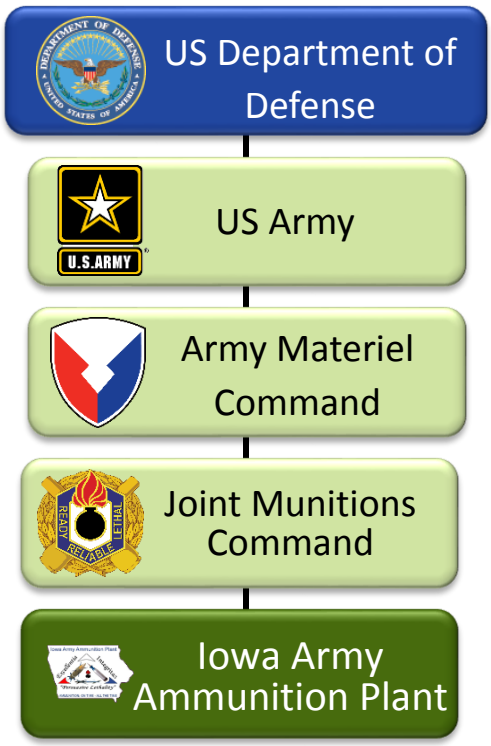
The vision of the Joint Munitions Command (JMC) is to be the munitions sustainers for the Department of Defense (DoD), ensuring global munitions readiness.

1.3.6 JOINT MUNITIONS COMMAND STRATEGIC GOALS AND OBJECTIVES

The area development plan provides an Installation planning, programming and development strategy addressing current and programmed mission deficiencies and opportunities. JMC's long-term strategic objectives are as follows:

- Ammunition Enterprise Collaboration - Develop and sustain collaboration to assist the enterprise in becoming a more effective and efficient team of teams.
- Optimize Ammunition Industrial Base - Publish an integrated Production and Logistics Ammunition Industrial Base Plan which identifies the approaches to pursue an affordable and modernized base that sustains critical capabilities to support Joint Warfighter requirements.
- Develop Skilled and Adaptive Workforce - Develop a resilient and innovative workforce with adaptive leaders, manage workforce to workload by aligning skills and competencies with required functions, and ensure employees have training opportunities to refresh skills.
- Globally Integrate JMC Ammunition Logistics - Learn from customers how we can better support them from a wholesale perspective and provide standardized ammunition logistics processes to all Ammunition Supply Points activities and all global DOD ammunition logistics operations.

FIGURE 1-2: IAAAP ORGANIZATIONAL CHART



1.4 INSTALLATION PROFILE

IAAAP is a government-owned, contractor-operated (GOCO) facility under JMC command. Contract oversight is provided on-site by 26 government staff. A single contractor, currently American Ordinance (AO), manages all medium and large caliber ammunition production. Current capabilities at IAAAP include the following:

- High explosive artillery (155mm, 105mm)
- High Explosive Artillery Propelling Charges
- Module Artillery Charge System
- 105 & 120 mm Tank Rounds
- Mortar Initiating & Propelling Components
- 40 mm Grenades
- 40 lb Cratering Charges
- Medium and large caliber mortars
- Insensitive munitions
- Smart munitions mines / scatterable mines
- Missile warhead assembly
- Range testing
- M112 demo charges
- Mine-clearing line charges
- Pressed and cast warheads
- Salute rounds

1.4.1 IAAAP MISSION

The current IAAAP Mission Statement is as follows: "Iowa Army Ammunition Plant (IAAAP) Loads, Assembles, Packs medium and large-caliber ammunition items for the Department of Defense using modern production methods in support of worldwide operations."

1.4.2 IAAAP HISTORY

IAAAP was established in November 1940 as the Iowa Ordnance Plant and started production in 1941. Throughout World War II, the plant served as a Load, Assembly, Pack (LAP) facility for bombs, artillery shells, and mines for the US Army. Production was stopped in 1945, at the end of World War II. In 1947, the Atomic Energy Commission took responsibility of the plant, but the plant resumed its ammunition manufacturing mission in 1949. In 1950, production increased dramatically in response to the Korean War conflict. During these years, IAAAP was known as the Burlington Atomic Energy Commission Plant (BAECP) to assemble nuclear weapons. In 1975, the Army assumed responsibility for the Atomic Energy Commission functions and became Iowa Army Ammunition Plant. Since 2001, it has been operated by American Ordinance.

1.4.3 IAAAP WORKFORCE AND TENANTS

The Army Stationing and Installation Plan (ASIP) reports a total FY16 population at IAAAP of 877 personnel (PN). Of this total, approximately 0.1% are military, 2.7% are government civilians, and 94% are contractors. The ASIP indicates the total population is expected to remain steady over the next five years. Most personnel on-site are commercial contractor employees.

IAAAP tenant organizations and approximate personnel numbers are listed below:

United States Army Reserve
5 PN

Iowa Army National Guard
12 PN

American Ordnance
826 PN

Defense Logistics Agency
1 PN

Allworth Contracting
TBD

AMTEC Corporation
TBD

Appalachian Rail Car Services
TBD

General Dynamics Ordnance and Tactical Systems (GDOTS)
TBD

SAIC
TBD

Great River Medical Services
TBD

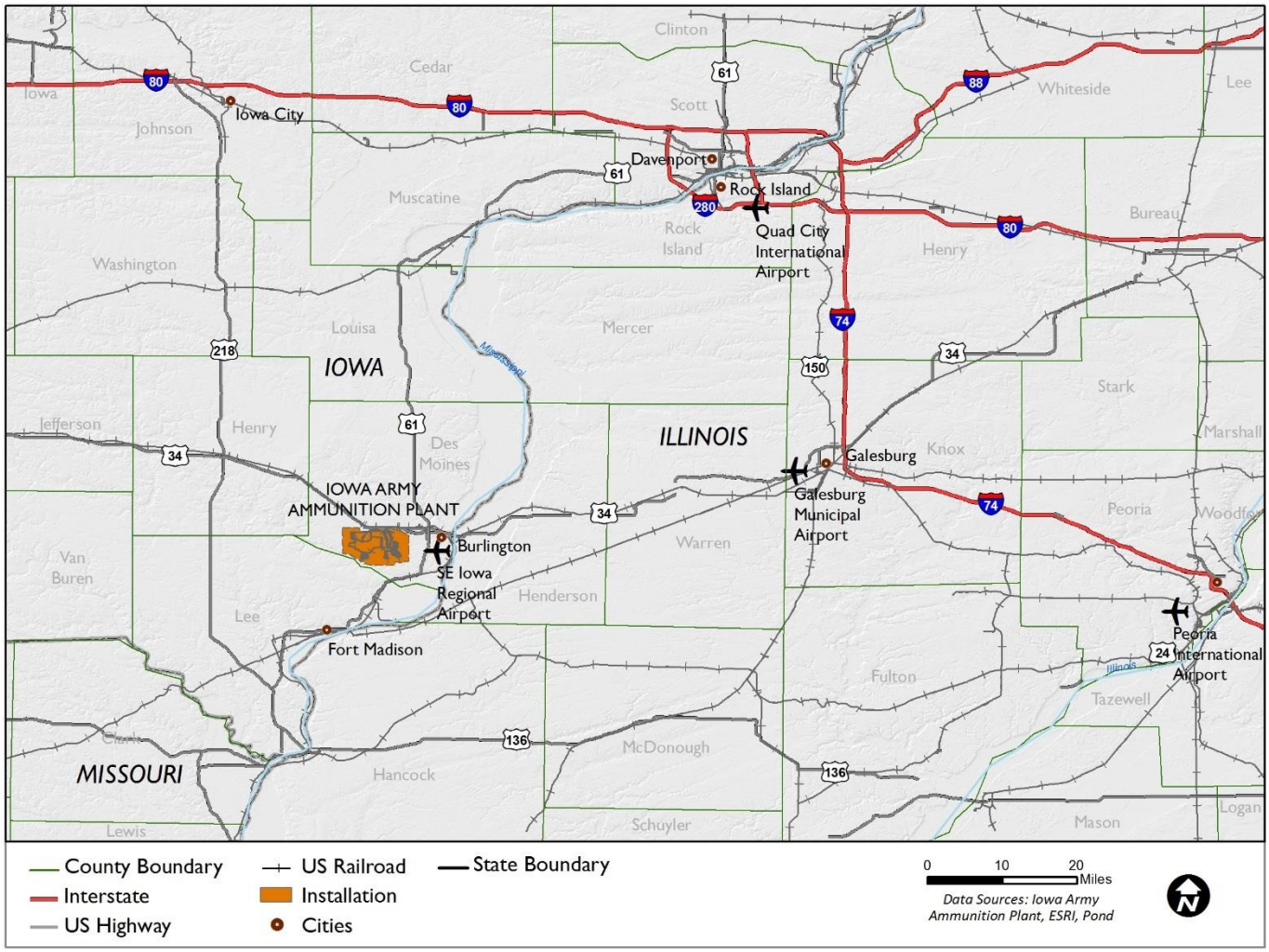
2 EXISTING CONDITIONS

2.1 VICINITY LOCATION

Iowa Army Ammunition Plant occupies 19,011 acres in Middletown, IA, a community of roughly 300 residents located 13 miles due west of Burlington, IA. The plant is accessed from Highway 79, which runs east to west. The installation is also located along Burlington Northern Santa Fe (BNSF) rail lines that connect to Missouri and Illinois.

IAAAP maintains a strong relationship with the surrounding community, including the cities of Burlington, West Burlington and Middletown. The installation has a substantial annual impact on the local economy as the second largest employer in the region.

FIGURE 2-1: VICINITY LOCATOR MAP



2.2 DEMOGRAPHIC ANALYSIS

Demographic information from the US Census Bureau along with state and regional data, can provide a quantified justification for an installation's location. A 13-county regional study area was determined based on the proximity to IAAAP. Demographic information for this study area was compiled and analyzed to determine how regional characteristics and trends may influence on-base decisions.

The current total population for the regional study area is roughly a quarter of a million residents. Des Moines County, IA—where IAAAP is located—is the most populous county, followed by the counties of Lee (IA) and McDonough (IL). The regional annual household income is $8,000 lower than the national average; however, the percentage of those below the poverty line is slightly lower than the nation as a whole. The region also exceeds the national average of college-educated residents by 2%. Additional demographic information is included in Figure 2-2 and Table 2-1.

TABLE 2-1: KEY DEMOGRAPHIC FACTS

	DES MOINES COUNTY	REGIONAL STUDY AREA	UNITED STATES
Total Population	40,480	254,102	306 Million
Median Age	41.5	41.4	37
Median Household Income	$43,427	$44,921	$53,046
Average Household Size	2.3	2.97	2.68
Population Below Poverty Line	11%	10%	11%
Population with Bachelor's degree or higher	20%	20%	18%
Population in the Labor Force	63%	63%	65%

Data Source(s): US Census Bureau.

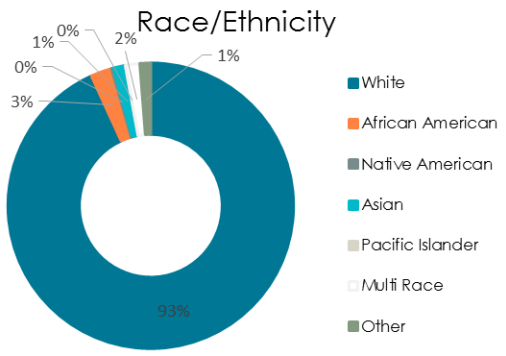
The regional study area is expected to lose approximately 3,500 residents between 2010 and 2030. This 1.38% decrease in regional population will primarily affect the counties closest to Burlington, Iowa. Henderson County alone is expected to lose 11.2% of its population. During this same period, however, single-digit population gains are predicted for counties in the northern and eastern portions of the study area, closest to the communities of Iowa City, IA; Davenport, IA; and Galesburg, IL. Population projections are summarized in Figure 2-3 and Table 2-2.

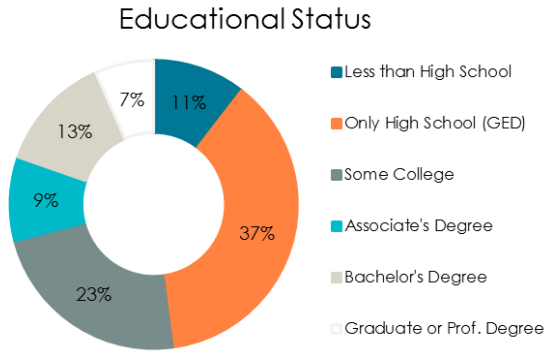
TABLE 2-2: POPULATION CHANGE, 2010-2030

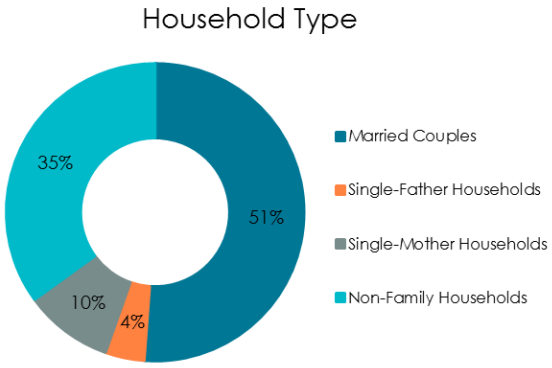
	2010 GENERAL POP.	2030 PROJECTED POP.	PERCENT CHANGE
Hancock County, Illinois	19,104	18,924	-0.94
Henderson County, Illinois	7,331	6,510	-11.20
McDonough County, Illinois	32,614	33,149	1.64
Mercer County, Illinois	16,434	16,465	0.19
Warren County, Illinois	17,707	18,081	2.11
Des Moines County, Iowa	40,325	38,176	-5.33
Henry County, Iowa	20,145	20,282	0.68
Jefferson County, Iowa	16,810	16,117	-4.12
Lee County, Iowa	35,862	32,853	-8.39
Louisa County, Iowa	11,757	12,225	3.98
Van Buren County, Iowa	7,439	7,545	1.42
Washington County, Iowa	21,563	23,375	8.40
Clark County, Missouri	7,011	6,904	-1.53
TOTAL	**254,102**	**250,606**	**-1.38**

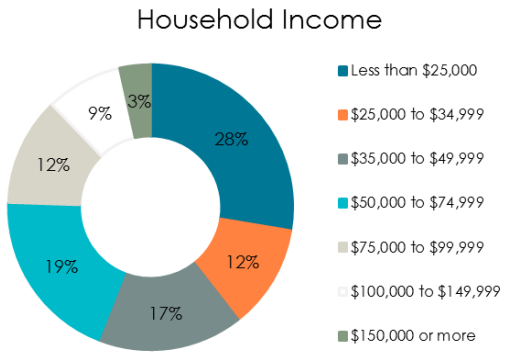
Data Source(s): State of Illinois Data Portal, State Data Center of Iowa, Missouri Economic Research and Information Center, Pond

FIGURE 2-2: REGIONAL DEMOGRAPHICS









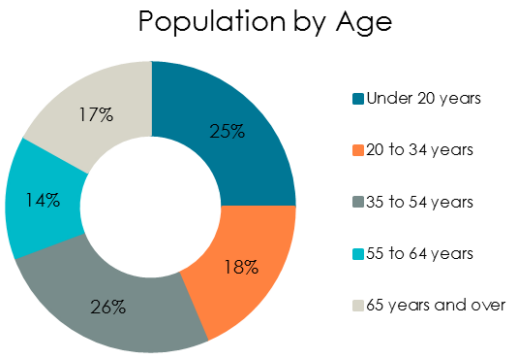
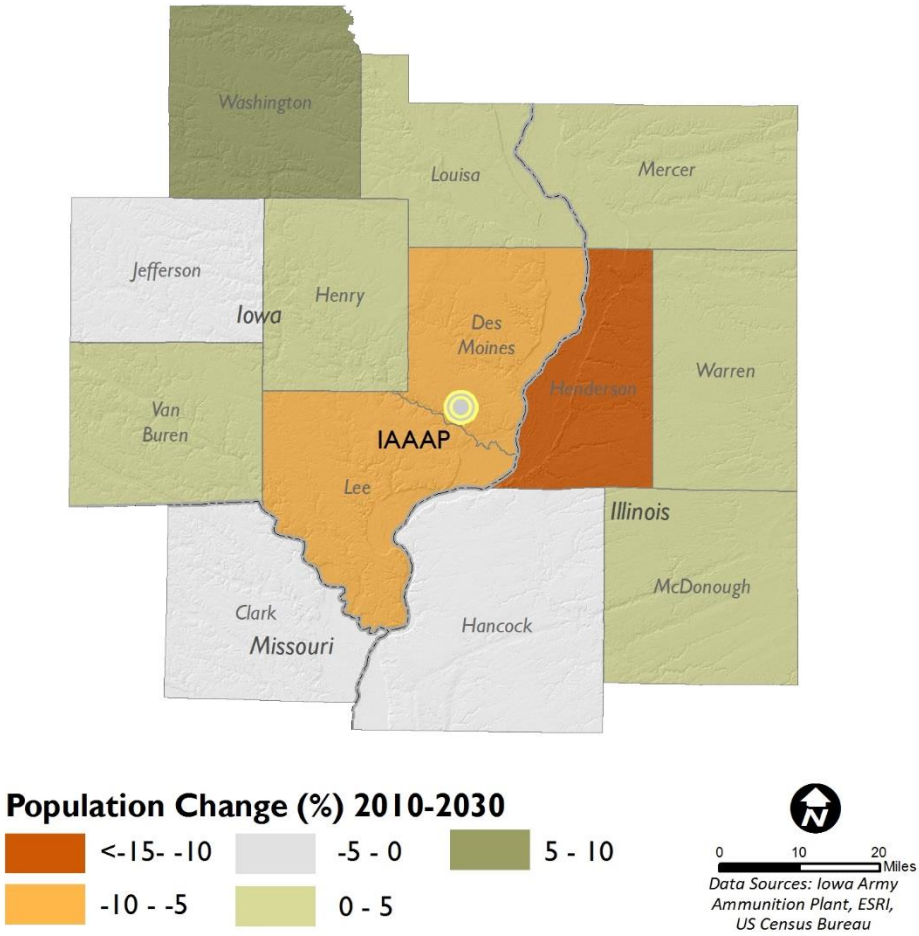


FIGURE 2-3 POPULATION CHANGE, 2010-2030



2.3 MILITARY-RELEVANT INDUSTRY SECTORS

In addition to examining demographics, analyzing local economies and market structure is vital for strategic planning efforts. Locating strong concentrations of employment within a specific industry helps inform sustainability of the local job market. Employment data based on North American Industry Classification System (NAICS) and gathered from the US Census Bureau and the US Department of Labor Bureau of Labor Statistics were analyzed for the following industries:

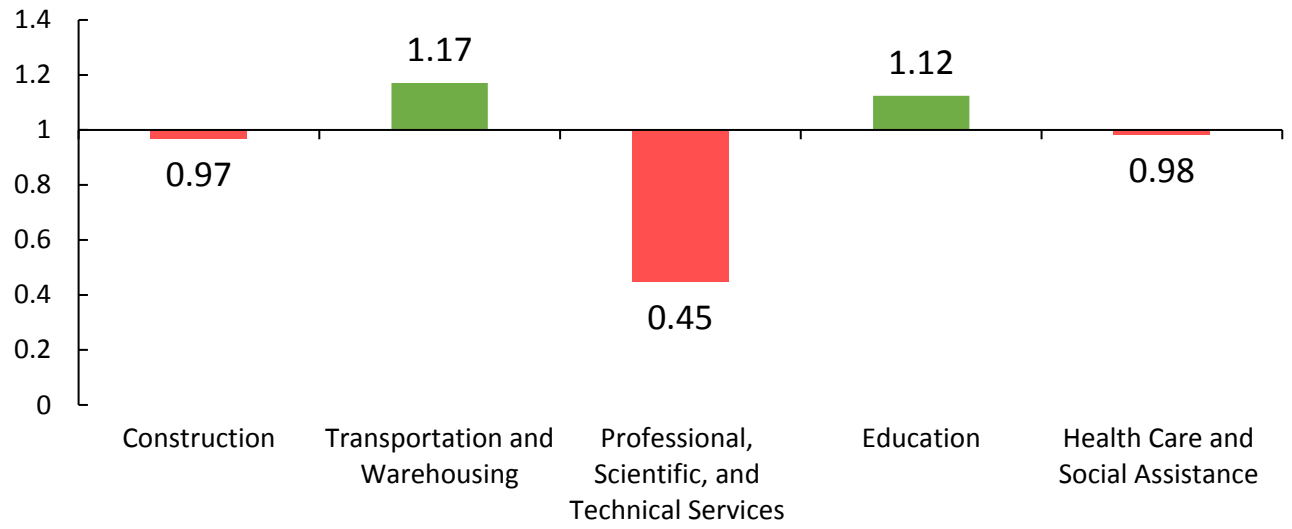
- Education
- Health Care and Social Assistance
- Construction
- Transportation and Warehousing
- Professional, Scientific, and Technical Services

Local employment numbers were compared to national trends through a Location Quotient (LQ) analysis. This analysis identifies the portion of the local job market represented by a particular industry and compares this to national averages. The resulting LQ is a ratio that scores the importance of a particular industry within the local economy. An LQ greater than 1.0 indicates that an industry plays a uniquely important role within a local economy and that the community may have a competitive advantage within this professional field. Conversely, an LQ less than 1.0 indicates that an industry may be underrepresented at the local level.

To determine the relative significance of industrial concentration, the LQ thresholds below are considered.

- **Low Concentration:** LQ less than 0.75
- **Average Concentration:** LQ greater than 0.75, but less than 1.25
- **High Concentration:** LQ value greater than 1.25

FIGURE 2-4: LOCATION QUOTIENT FOR RELEVANT INDUSTRIES IN THE IAAAP REGION.



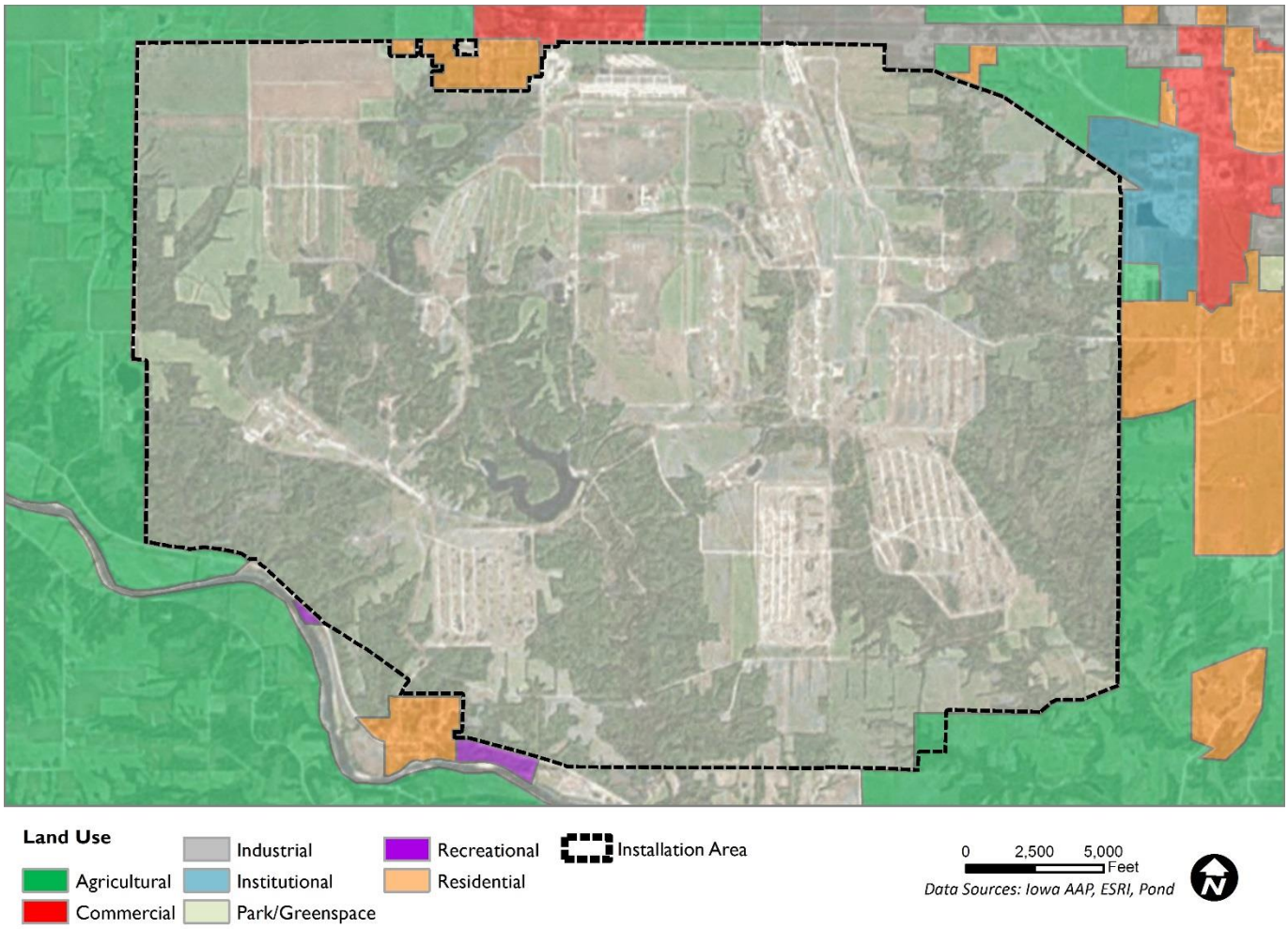
Using a Location Quotient analysis, IAAAP leadership can identify regional workforce strengths and weaknesses. The Vision Plan for IAAAP should take into consideration labor force characteristics in order to have an adaptable mission capability and continue to be a warfighter support industry leader. Among military-relevant industries, the IAAAP region is comparable to the nation as a whole. The region has a considerably higher concentration in Transportation and Warehousing. These industries are consistent with the expertise required to fulfill the current mission at IAAAP. The installation is well-sited to actively recruit capable employees from the Burlington metropolitan area.

2.4 LAND USE

The area immediately adjacent to IAAAP is comprised of Agricultural, Industrial, Commercial, Residential, and Institutional land uses. Agricultural, industrial, and commercial uses are generally compatible with plant operations, but residential areas pose a potential conflict. Historically, IAAAP has maintained a positive relationship with surrounding residential community, though the expansion of industrial activity or the development of additional housing units could strain that relationship.

Unique to IAAAP is the off-site location of both the Administrative Building and the Commander's house. Both buildings are located in the residential neighborhood at the northern edge of the installation. This location outside of the secure fence is a security vulnerability that should be addressed in future planning efforts.

FIGURE 2-5: SURROUNDING LAND USE



2.5 EXISTING FACILITIES

An analysis of current installation real property assets against facility requirements helps to identify potential facility surpluses or deficiencies. By examining the assets and requirements, needs for future development, and potential for mission expansion possible opportunities for facility reuse or reorganization can be recognized. Additionally, accurate reporting of real property assets is essential for establishing auditability for purposes of future Military Construction (MILCON) and modernization programming.

Reports from the Real Property Planning and Analysis System (RPLANS) were tabulated to determine square footage of existing assets at IAAAP by building and category code. These figures were then adjusted to reflect IAAAP's recently updated Real Property Inventory (RPI). Using the RPLANS summary tab report, which generates space allowances based on existing and projected force structure and infrastructure asset data, facility surpluses and deficits at the installation were then identified. Results of this tabulation are further explored below and are summarized in Table 2-3.

Currently, IAAAP has approximately 112,067,634 square feet (SF) of facility space, and approximately 946,895 square yards (SY) of paved surfaces. A review of Army centralized records databases for current assets and requirements identified a facility surplus of 66,011,462 SF, or 58.90% above authorization. The data indicate that IAAAP has specific *mathematical surpluses* in the following CATCODES:

44220- Storage Building, General Purpose, Installation – IAAAP has 1,050,713 SF of storage space. This is 772% more than the authorized SF of 120,466.

21910- Engineering, Housing Maintenance Shop – As IAAAP is not authorized any space for this function, all 129,192 SF of facility space is in surplus.

61050- Administrative Building, General Purpose – IAAAP has 97,063 SF of facility space. This is 9,144% surplus of the 1,050 SF of space authorized.

21410- Vehicle Maintenance Shop – As IAAAP is not authorized any space for this function, all 16,667 SF of maintenance space is in surplus.

44230- Controlled Humidity Warehouse, Installation – IAAAP has 7,200 of warehouse space. This is a 4,400% surplus of the 160 SF of space authorized.

44240- Flammable Material Storehouse, Installation – As IAAAP is not authorized any space for this function, all 3,758 SF of space is considered surplus.

17131- Compact Item Repair Instructional Building – As IAAAP is not authorized any space for this function, all 1,500 SF of this space is considered surplus.

44222- Storage Shed, General Purpose, Installation – IAAAP has 1,125 SF of storage shed space. This is 1,003% surplus of the 102 SF authorized.

71113- Family Housing, LT Colonel and Major – IAAAP has 2,951 SF of housing space. This is a 41% more than the authorized 2,098.

21870- Maintenance Storage, DOL, DPW, IMMA, IMMD – As IAAAP is not authorized any space for this function, all 572 SF is considered surplus.

85215- Non-Organizational Vehicle Parking, Unpaved – IAAAP is only authorized 14,838 SY of unpaved parking and currently has 338,852. This is a surplus of 2,184% for unpaved parking.

The data indicate that IAAAP has specific *mathematical deficits* in the following CATCODES:

44271- Consolidated Housing Furniture Storage – IAAAP currently has 0 SF and is authorized 2 SF of furniture storage space. This is a 100% deficit in square footage.

44228- Hazardous Material Storage Building, Installation – IAAAP has 884 SF of the 1,017 SF authorized for hazardous material storage space. This is a 13% deficit in square footage.

44224- Organizational Storage Building – IAAAP currently has 0 SF and is authorized 700 SF of storage space. This is a 100% deficit of square footage.

71116- Family Housing, Junior NCO, Enlisted – IAAAP currently has 0 SF for Junior NCO housing. With 1,479 SF authorized, this is considered a 100% deficit.

71115- Family Housing, Senior NCO – IAAAP currently has 0 SF of space for Senior Noncommissioned Officers (NCO) housing. With 7,896 SF authorized, this is considered a 100% deficit.

85110- Cantonment Area Roads, Paved – IAAAP currently has 594,437 SY of roadways and is authorized 616,274 SY. This is a 4% deficit in paved roadways.

85210- Organizational Vehicle Parking, Paved – IAAAP is authorized 33,463 SY for Table of Organization and Equipment (TOE) / Table of Distribution and Allowances (TDA) military and commercial vehicles, trailers and generators but currently only has 10,221 SY. This is a 69% deficit in parking.

TABLE 2-3: REAL PROPERTY ANALYSIS

FY	CATCODE	CATCODE DESCRIPTION	UM	TOTAL ASSET	REQUIREMENT*	SURPLUS / (DEFICIT)	% SURPLUS / (DEFICIT)
2017	44220	STORAGE GP INST	SF	1,050,713	120,466	930,247	772
2017	21910	ENG/HOUSING MNT	SF	129,192	0	129,192	100
2017	61050	ADMIN GEN PURP	SF	97,063	1,050	96,013	9,144
2017	21410	VEH MAINT SHOP	SF	16,667	0	16,667	100
2017	44230	CONTR HUM WH IN	SF	7,200	160	7,040	4,400
2017	44240	FLAM MAT STR IN	SF	3,758	0	3,758	100
2017	17131	COMP REP INST	SF	1,500	0	1,500	100
2017	44222	STR SHED GP INS	SF	1,125	102	1,023	1,003
2017	71113	FH LTC/MAJ	SF	2,951	2,098	853	41
2017	21870	MNT STORAGE DOL	SF	572	0	572	100
2017	22640	LD PT > 120MM	SF	606,428	606,428	0	0
2017	42280	IGLOO STR INST	SF	418,937	418,937	0	0
2017	42215	HE MAG INST	SF	388,551	388,551	0	0
2017	22635	LD PT 76-120MM	SF	280,137	280,137	0	0
2017	22655	CAST HE FIL PT	SF	213,932	213,932	0	0
2017	14133	SHIP/RECV FAC	SF	160,827	160,827	0	0
2017	22625	SM CAL LD <40MM	SF	67,612	67,612	0	0
2017	89121	HEAT PLT BLDG	SF	66,987	66,987	0	0
2017	42235	READY MAG INST	SF	48,469	48,469	0	0
2017	17142	ARNG/USAR CTR	SF	47,036	47,036	0	0
2017	22638	AMMO QA/CAL PRO	SF	42,600	42,600	0	0
2017	21407	ARNG VEH MAINT	SF	34,236	34,236	0	0
2017	42183	GP MAGAZINE DEP	SF	29,847	29,847	0	0
2017	31610	CHM EQ/MAT BLDG	SF	25,351	25,351	0	0
2017	21840	RR EQ/EN MAINT	SF	22,203	22,203	0	0
2017	31010	CHEMISTRY LAB	SF	14,507	14,507	0	0
2017	22628	MTL PARTS LD PT	SF	13,233	13,233	0	0
2017	31510	ORDNANCE BLDG	SF	12,500	12,500	0	0
2017	21630	AMMO DEMIL DEP	SF	11,849	11,849	0	0
2017	42283	MAG GP INST	SF	10,336	10,336	0	0
2017	22665	AMMO WASHOUT	SF	10,009	10,009	0	0
2017	21640	DUN BLDG DEPOT	SF	8,000	8,000	0	0
2017	21710	ELE MAINT DEPOT	SF	6,035	6,035	0	0
2017	74012	CAFETERIA	SF	5,294	5,294	0	0
2017	73010	FIRE STATION	SF	5,055	5,055	0	0
2017	21850	BATTERY SHOP	SF	4,511	4,511	0	0
2017	73016	POLICE/MP STA	SF	4,385	4,385	0	0
2017	73030	LAUNDRY/DRY CLN	SF	4,182	4,182	0	0
2017	21610	AMMO RENO DEPOT	SF	3,720	3,720	0	0
2017	89111	PWR PLT BLDG	SF	3,116	3,116	0	0
2017	31730	ELECTL EQ BLDG	SF	2,990	2,990	0	0
2017	14113	ACCESS CNT FAC	SF	2,923	2,923	0	0
2017	13131	INFO PROC CTR	SF	2,767	2,767	0	0
2017	44110	STORAGE GP DEP	SF	2,520	2,520	0	0
2017	21612	AMMO SURV DEP	SF	2,355	2,355	0	0

FY	CATCODE	CATCODE DESCRIPTION	UM	TOTAL ASSET	REQUIREMENT*	SURPLUS / (DEFICIT)	% SURPLUS / (DEFICIT)
2017	74060	BREAK/LUNCH RM	SF	2,325	2,325	0	0
2017	89131	SEW/WST WTR TRT	SF	2,274	2,274	0	0
2017	14161	EMERG OPNS CNTR	SF	1,608	1,608	0	0
2017	14179	OVERHEAD PROTEC	SF	1,600	1,600	0	0
2017	89141	WTR SUP/TRT BLD	SF	1,540	1,540	0	0
2017	13120	COMMO CTR	SF	1,343	1,343	0	0
2017	44150	FLAM MAT STR D	SF	1,000	1,000	0	0
2017	22616	EXPLOS MFG PT	SF	941	941	0	0
2017	42104	EXP TRANS DEPOT	SF	840	840	0	0
2017	89144	WTR SUP BLD NP	SF	169	169	0	0
2017	73075	SEP TOIL/SHOWER	SF	162	162	0	0
2017	22685	AMMO PROD STRUC	SF	88	88	0	0
2017	44271	HSG FURN STR	SF	0	2	(2)	(100)
2017	44228	HAZ MAT STR INS	SF	884	1,017	(133)	(13)
2017	44224	ORG STR BLDG	SF	0	700	(700)	(100)
2017	71116	FH JR NCO/ENL	SF	0	1,479	(1,479)	(100)
2017	71115	FH SR NCO	SF	0	7,896	(7,896)	(100)
2017	85215	NONORG PK PAVD	SY	338,852	14,838	324,014	2,184
2017	85120	VEHICLE BRIDGE	SY	3,385	3,385	0	0
2017	85110	ROADS, PAVED	SY	594,437	616,274	(21,837)	(4)
2017	85210	ORG PARK PAVED	SY	10,221	33,463	(23,242)	(69)
			Total SF	**3,908,955**	**2,732,300**	**1,176,655**	
			Total SY	**946,895**	**667,960**	**278,935**	

Data Source(s): Summary Tab report and Real Property Inventory report, RPLANS, dated January 2017
**Requirements data reported in RPLANS may be outdated. This information is included to highlight any potential discrepancies that should be updated prior to future planning efforts.*

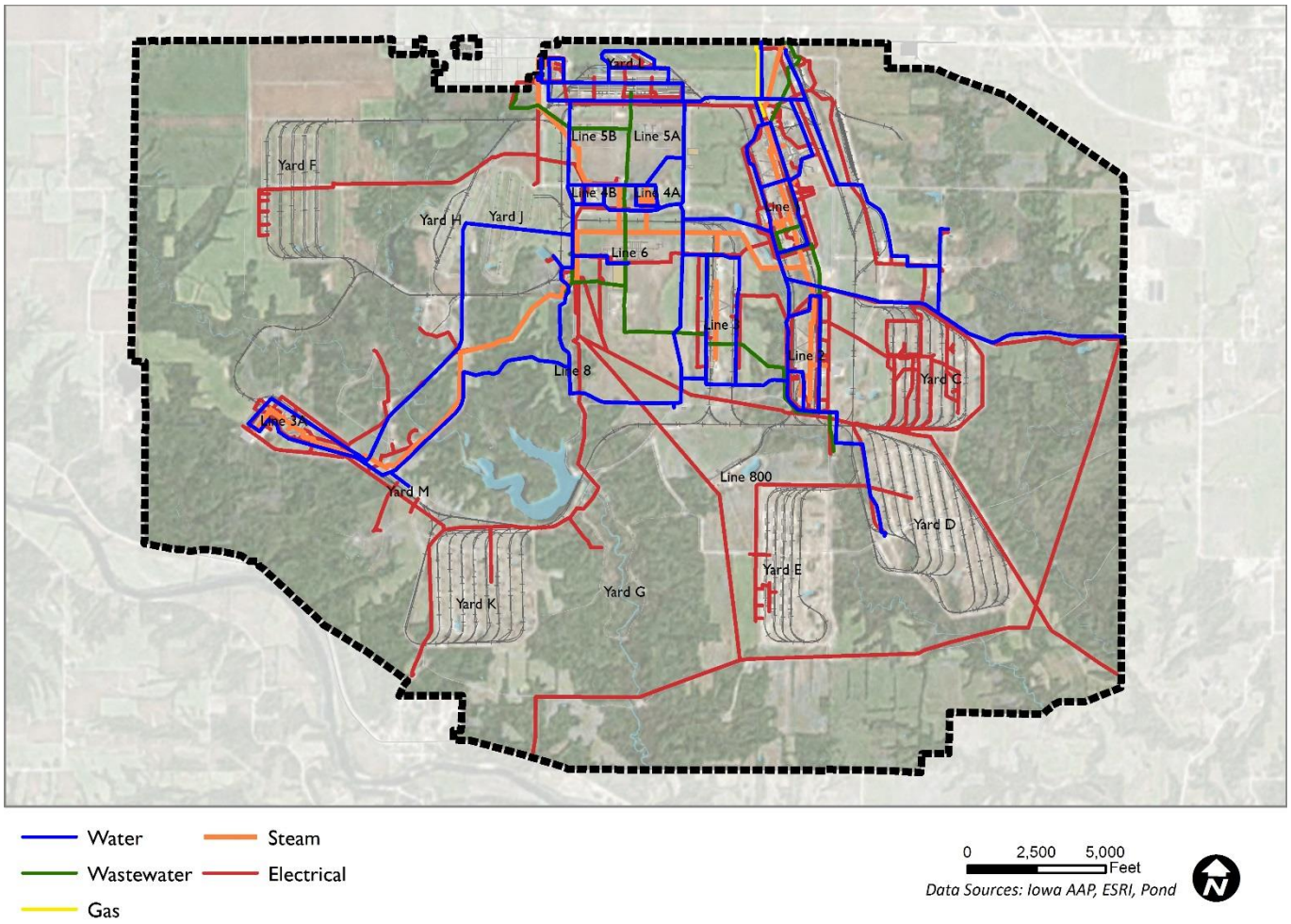
2.6 UTILITY INFRASTRUCTURE

Stakeholder interviews yielded the following information related to utility infrastructure at the installation:

- Many of the utilities, specifically water lines, have been upgraded in the past 10 years.
- Maintenance is needed along the electrical lines.
- There are nine permitted stormwater discharge sites.
- IAAAP plans to replace the plant-wide steam system with several localized package boilers.
- Natural gas is being phased in to replace coal power.
- The current sewerage system is in disrepair.

Existing utility infrastructure is shown in Figure 2-6.

FIGURE 2-6: EXISTING UTILITIES



2.7 KEY FINDINGS OF EXISTING CONDITIONS

An overview of existing conditions for the installation provides the following key findings:

- The plant serves as a significant employment center for the region and generally maintains a positive relationship with the surrounding community.
- The reginal population is projected to remain stable over the next decade, but about 7% of the population is expected to shift away from IAAAP and the immediate Burlington area towards other counties within the region.
- The region has an above-average concentration of Transportation and Warehousing professionals, indicating the plant is likely well-sited for recruiting in this industry sector.
- Any future facility expansion within the installation should avoid adjacency with residential uses outside the installation boundary
- The location of the Administrative building is not conducive to current AT/FP standards and should be removed from the residential area surrounding the installation.
- Existing real property data shows a facility surplus of nearly 1.2 million SF. This should be further examined prior to future planning efforts. Any validated surpluses or deficits should be considered and balanced in the Area Development Planning process.

3 PLANNING PROCESS IMPLEMENTATION

The planning process was kicked off by a series of stakeholder interviews conducted by the Planning Team to gather background information related to the installation, followed by an on-site Vision Planning workshop. The workshop first included an overview of Master Planning theory and practice followed by an overview of the UFC for Installation Master Planning. Several hands-on exercises followed the introductory presentation, including a strengths, weaknesses, opportunities, threats, and vision analysis (SWOT-V). Stakeholders analyzed existing conditions and development constraints to identify opportunities for future development on the installation. A vision statement and framework plan were crafted as a culmination of the planning efforts that took place. Products developed during the workshop were briefed to installation Command by stakeholders at the conclusion of the workshop.

3.1 STAKEHOLDER INTERVIEWS

A key focus of the planning effort was to garner as much collaboration and information as possible while developing requirements and possible design solutions. The interviews focused on information related to current mission, existing conditions of facilities and infrastructure, and future capacity.

Government and contractor representatives from the following offices met with members of the Planning Team prior to the Vision Plan workshop and provided their needs, opinions, and expertise:

- LTC Aaron Wolfe, Commander
- Julie Solinski, Deputy to the Commander
- Dave Wetzel, AO Quality
- Tony Noll, AO Facilities
- Byron Tatti, AO Director of Business Management
- Don Halferty, AO Vice President of Operations
- Joe Schilling, Program Manager - Tank Ammunition
- Kevin Hovden, AO Program Manager - Warheads
- Allen Buren, Security Officer
- Willian Hilger, AO EHS
- Leanna Lopez, Safety Engineer
- Mel Gibson, AO Contracts
- Dan Darley, AO Materials Division
- Bruce Akers, Contracts
- Steven Bellrichard, Operations Support Division Chief
- Max Kamrath, AO Program Manager – 40 mm
- Tammy Dean, Business Development
- Stephanie Johnson, Public Affairs
- Randy Kinney, Quality
- Jessi Mynatt, AO Project Manager
- Randy Doyle, Environmental Coordinator
- Denise Waymack, IT Specialist
- Steve Burger, Contract Administrator
- Butch Hicks, Safety and Operational Health Specialist
- Joe Haffner, Management Agronomist

Over the course of the interviews, a list of common themes was derived from concerns and ideas expressed by more than one stakeholder. The following list summarizes key findings from stakeholder interviews:

- The Administration Building's current location is a security vulnerability and should be relocated to an area inside of the secured fence.
- Many stakeholders advocate replacing Line 3A with a new, centrally located production line. This would allow nearly all of the western portion of the installation to be leased out for agricultural purpose.
- The installation has a large excess of vacant or underutilized facilities. Modern plant processes and equipment are far more compact. Significant efficiency can be gained by replacing outdated and oversized facilities with modern, compact production lines.
- Sewerage system is in disrepair.
- Several of the production line facilities are in poor condition, requiring renovation or replacement.
- Many utilities have had an upgrade in the last 10 years.
- Production lines have modest break areas, but no dining options.
- Many bathrooms need renovation.
- The plant has the capability to take on a surge in production as well as additional missions.
- The installation has a large land area, providing flexibility in future mission changes, expansions, or contractions and may be able to accommodate the development of large onsite energy generation facilities.
- Lighting in the production facilities needs to be modernized for a higher quality work environment.
- IAAAP lacks a proper primary security gate and Visitor Control Center.
- The plant lacks adequate pedestrian circulation network.

3.2 LEADERSHIP IN-BRIEF

The vision process was kicked off by leadership from both Army Materiel Command, as well as Joint Munitions Command - both the parent organizations of Iowa Army Ammunition Plant. Stephen Evans from AMC gave a brief overview of the project, stating that all installations must have a master plan in place by 2018, as directed by the Under-Secretary of Defense. Jim Janke from JMC also regarded the importance of this process going forward to receive funding. Finally, LTC Aaron Wolfe addressed the group and stated that Iowa had significant capabilities to give the Department of Defense and that many people will be around to see the efforts of this process come to fruition, therefore should take this process seriously.

3.3 VISION DEVELOPMENT

During the Vision Planning Workshop a Vision Statement was developed by the installation stakeholders group to guide in future development at Iowa Army Ammunition Plant. This vision statement was created based on input received from the project stakeholders during the SWOT-V analysis followed by a group keyword exercise. Stakeholder input was gathered to develop a preferred planning vision, which outlines clear and measurable planning goals.

IAAAP REAL PROPERTY PLANNING VISION

Iowa Army Ammunition Plant will be the center of excellence for medium and large caliber munitions design and production for the Warfighter by developing **efficient and flexible facilities and infrastructure** capable of **adapting and scaling** to changing market demand in both peace and war time. IAAAP will develop a **safe**, **secure**, **modern** and **process-driven industrial core** through strategic facility layout and utilizing innovative technologies. IAAAP will strive to cultivate pride in its workforce and community by implementing **user-focused**, **quality design** and development practices.

3.3.1 PLANNING GOALS AND OBJECTIVES

The planning goals and objectives listed below were developed by the stakeholders through multiple collaborative exercises performed during the Vision Planning Workshop. The planning objectives establish a common design theme that will be used to guide area development planning at Iowa Army Ammunition Plant.

GOAL 1: SAFE AND SECURE

Safety and security should be maintained through both formal and informal means.

- Maintain workplace safety through facilities maintenance and modernization and implementing effective policies and procedures. Lighting, visibility, and overall maintenance should be enhanced so personnel feel safe when on-site.
- Identify and eliminate security vulnerabilities to protect against outside threats.
- Implement functional redundancies for utilities to safeguard against unforeseen events and ensure energy security.
- Identify existing facilities that do not comply with Crime Prevention through Environmental Design (CPTED) criteria—such as clear sight lines and defensible space—and pursue design interventions to improve safety conditions.
- Eliminate Anti-Terrorism/Force Protection (AT/FP) vulnerabilities caused by inadequate stand-offs between buildings, parking, and roadways.

GOAL 2: ADAPTING AND SCALING

Procedures and facilities should be enhanced or designed to be agile and responsive to changes in mission or production levels, without adversely impacting cost or product quality.

- Plan new or retrofit existing facilities to accommodate significant increases or decreases to work production or new missions.
- Maintain design and planning consistency and ensure new facilities support both the current mission and long-term development vision.
- Monitor industry changes, new technologies and protocol, and actively identify existing facilities capable of adapting to anticipated future requirements.

GOAL 3: EFFICIENT AND FLEXIBLE FACILITIES AND INFRASTRUCTURE

Providing the opportunity for efficient use of the built environment allows for a streamlined process that minimizes unnecessary space and costs. Additionally, facilities and infrastructure should be flexible enough to effectively respond to changes in production.

- Rebuild/renovate current facilities to withstand the 20-year outlook through segmented modernization projects.
- Repair and upgrade aged sewer system infrastructure.
- Design facilities with flexibility to meet changing demand or support new missions.
- Explore new manufacturing layouts to consolidate functions and generate additional capacity.

GOAL 4: MODERN

Buildings and infrastructure should utilize modern technology and design. Leadership should ensure processes and procedures employ modern practices.

- Identify strategic, efficiency-driven target areas for equipment modernization.
- Maximize facilities recapitalization through Production Based Support (PBS).
- Conduct pavement condition study to identify vulnerabilities in pavements.

GOAL 5: PROCESS-DRIVEN INDUSTRIAL CORE

Future development should support IAAAP's industrial process. Enhanced efficiency and effectiveness in production, storage, and testing operations should drive facility and infrastructure changes.

- Identify locational incompatibilities within existing facility layout. Identify necessary steps to relocate incompatible uses.
- Identify where new technologies or procedures could improve circulation of on-site materiel.

GOAL 6: USER-FOCUSED, QUALITY DESIGN

Processes, products, facilities, and infrastructure should be designed to preserve and enhance quality, as measured by its value to the user.

- Develop target FYs for repair or replacement of poor condition facilities.
- For current products, evaluate feasibility of and return on investment (ROI) for complete in-house production.

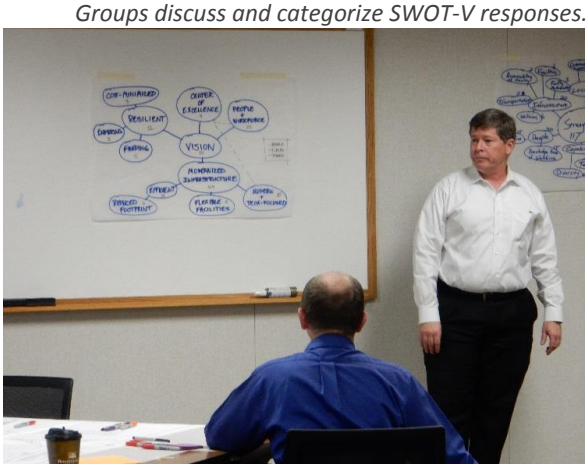
3.5 SWOT-V ANALYSIS

Using a technique called the Crawford Slip Method, participants responded to a series of questions about Iowa Army Ammunition Plant's strengths, weaknesses, opportunities, threats, vision, and what makes great industrial base. Participants were given three minutes for each question to come up with as many answers as possible, each written on a separate piece of paper. Answers to each question were collected and then compiled. Teams were asked to arrange the responses into a concept map that visually depicted common themes. Diagrams showing the results from these processes can be seen on the following pages.

Stakeholders write individual SWOT-V responses.

Groups discuss and categorize SWOT-V responses.

SWOT-V responses are grouped around common themes.



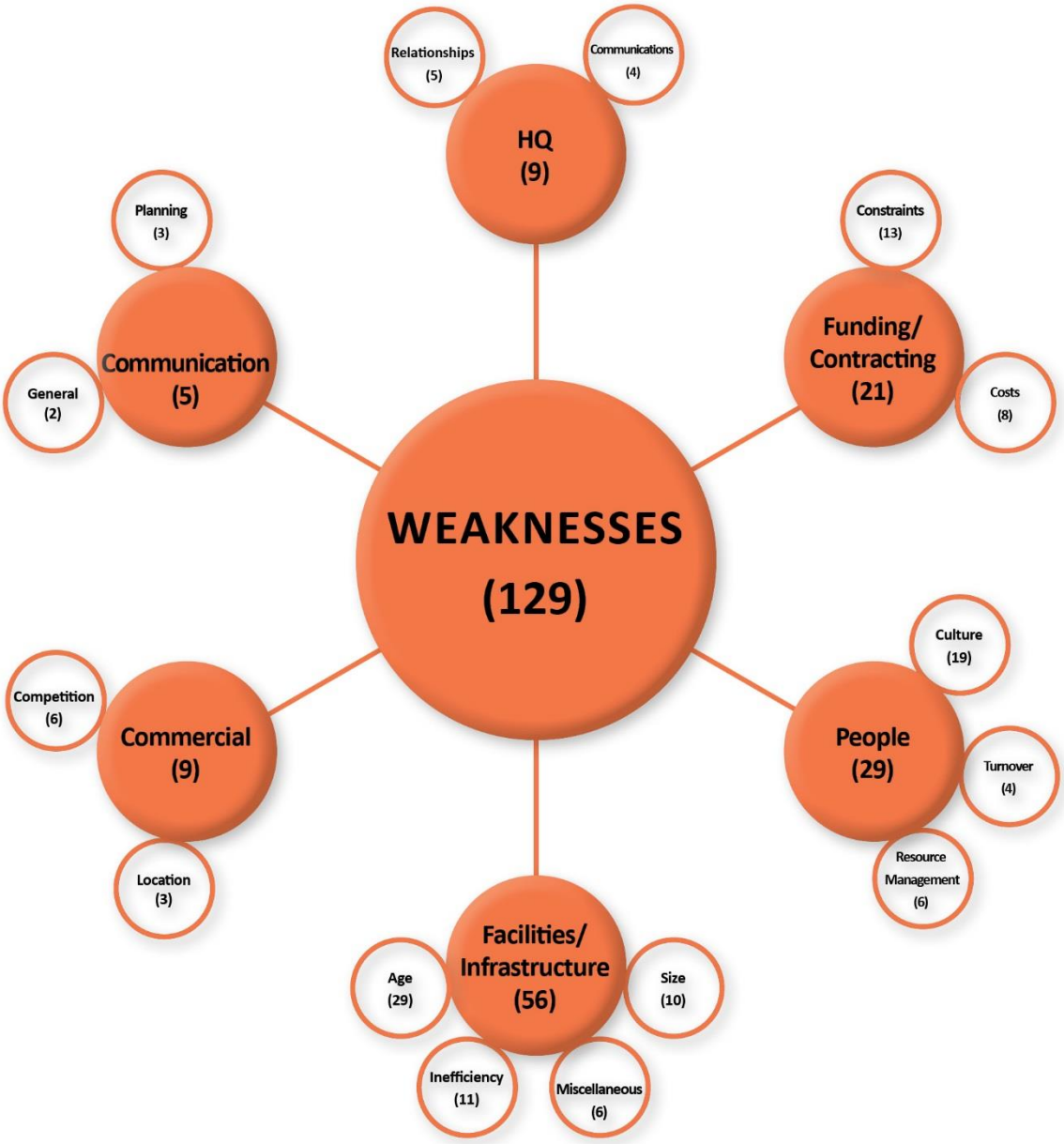
Concept diagrams are drawn and presented.

STRENGTHS are current assets that should be preserved and replicated. The most commonly identified strengths at IAAAP include the people, infrastructure, and culture of the facility. People as a strength refers specifically to the dedication and knowledge of the workforce. Stakeholders identified the infrastructure as a strength due to the robust utilities, facilities, and completed modernization efforts. Culture was also cited as a strength due to the corporate ideals that are implemented as well as the relationship between the government staff and contractors. Additional strengths include the capabilities of the production lines, the possibility of development and the geographic location of the installation. Figure 3-1 shows the resulting strengths diagram, which denotes the total number of responses for each theme.

FIGURE 3-1: STRENGTHS DIAGRAM

WEAKNESSES are liabilities that should be remedied or removed. Infrastructure was the most commonly identified weakness, including the facilities and infrastructure. People and the way funding and contracts are received was also noted. There were many similarities to the concepts noted as strengths. In regards to facilities and infrastructure, stakeholders found the age of the facilities to be the most prominent weakness. This also included the size of and inefficiencies within the facilities. The second highest responses belonged to the people, specifically the culture of the workforce. Funding and contracting was also cited as a weakness in regards to the constraints and costs. Additional weaknesses included commercial location and competition, headquarters, and communication about planning. Figure 3-2 shows the resulting weaknesses diagram, which denotes the total number of responses for each theme.

FIGURE 3-2: WEAKNESSES DIAGRAM



OPPORTUNITIES are elements that may be capitalized on in the future. The most identified opportunities at IAAAP related to business opportunities, infrastructure and mission expansion. In regards to business, stakeholder found there is potential for Armament Retooling and Manufacturing Support (ARMS) tenants, business development for additional capacity and room for efficiencies. A number of infrastructure opportunities were also identified, including quality of life upgrades, reuse and development of underutilized land areas, and upgrades to regional rail and highway system. Mission expansion was another opportunity due to the expansive nature of the facilities and property. Additionally, stakeholders saw opportunities in the people, energy and community. Figure 3-3 shows the resulting opportunities diagram, which denotes the total number of responses for each theme.

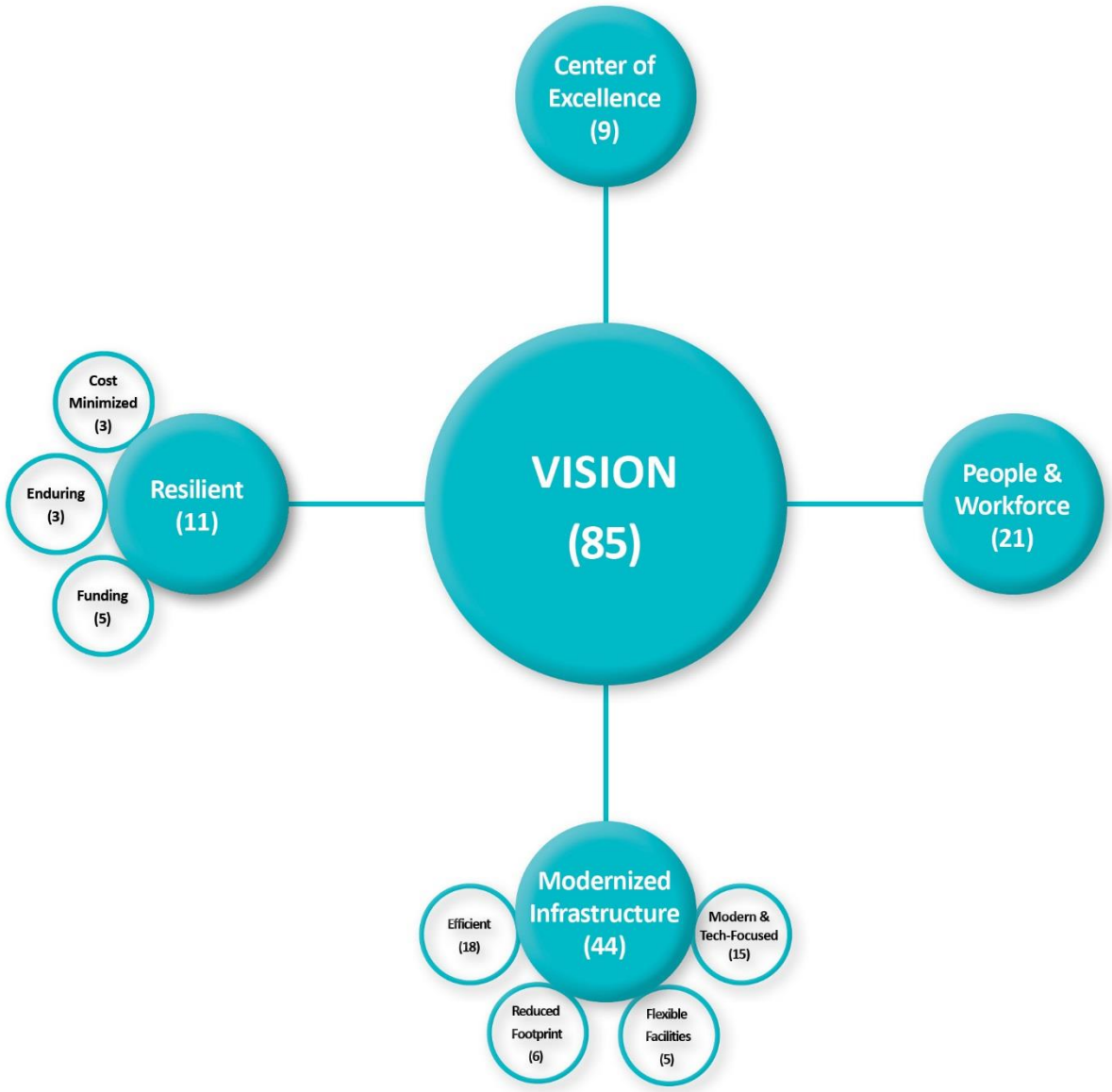
FIGURE 3-3: OPPORTUNITIES DIAGRAM

THREATS are elements that may impede future development at Iowa Army Ammunition Plant. The most commonly noted threats are related to funding and support, and regulations. Stakeholders expressed specific concern for the negative impacts of bureaucracy, BRAC, or community instability. Possible future implementation of overly-stringent regulations was considered a threat, possibly creating inefficiencies and stifling innovation in production. Many stakeholders also identified several threats to market forces and facilities including lack of cost competition, supply chain limitations, and competition with commercial industry. Figure 3-4 shows the resulting threats diagram, which denotes the total number of responses for each theme.

FIGURE 3-4: THREATS DIAGRAM

VISION is the anchor of the real property planning statement meant to guide all future planning at a site. Stakeholders strongly identified the need for IAAAP to modernize the infrastructure, specifically, to make facilities more efficient as well as more flexible and tech-focused. Secondly, stakeholders identified the importance of the people and workforce. Stakeholders want to invest more into the people and workforce that make the installation great. The group talked about the need to become more resilient, specifically related to funding. The final response was in regards to making IAAAP a center of excellence for munitions and explosives. Figure 3-5 shows the resulting vision diagram, which denotes the total number of responses for each theme.

FIGURE 3-5: VISION DIAGRAM



3.6 UNIFIED FACILITIES CRITERIA REVIEW

A thorough analysis of key planning documents provides a strong foundation on which future development may stand. By researching prior planning efforts, expertise is gained and redundancy is reduced, paving the way for a streamlined process of planning and design. During the Visioning Workshop stakeholders reviewed *UFC 2-100-01: Installation Master Planning, 2012* for content relevant to the comprehensive planning process. Key concepts identified by stakeholders are below and are also captured in the real property planning goals and objectives in Section 3.3.1.

- New Construction should focus on compact (where appropriate) infill development. Development should take place in areas already served by utilities, as opposed to undeveloped areas at the periphery of the installation.
- Facility, infrastructure, and transportation planning should occur at the district or installation level.
- Low Impact Development should be considered to better manage stormwater and preserve or improve water quality.

3.7 OPPORTUNITIES AND CONSTRAINTS ANALYSIS

Installation stakeholders worked with the planning team to conduct a site analysis as part of the Vision Planning Workshop. This analysis consisted of identifying, documenting, and verifying constraints and opportunities relating to buildings, historical significance, environmental conditions, and operations.

Stakeholders used planning documents and site maps to document opportunities and constraints across the installation. During the analysis, teams assessed building conditions and structural quality, as well as process workflow to identify potential deficiencies (see Figures 3-8 and 3-10, respectively). Stakeholders also assessed the existence of National Register of Historic Places (NRHP) eligible or designated sites to identify areas that should be preserved.

Data gathered from Geographic Information Systems (GIS) provided additional information, such as utilities and infrastructure, to be considered during the planning process. Unseen constraints present additional challenges for development. For example, quantity-distance (QD) arcs on magazine storage facilities restrict development. Often, there is a balance between the location of and investment in infrastructure and how it affects the proposed development. The results from this process are provided in graphic format on the following pages.

3.7.1 HISTORICAL AND CULTURAL RESOURCES

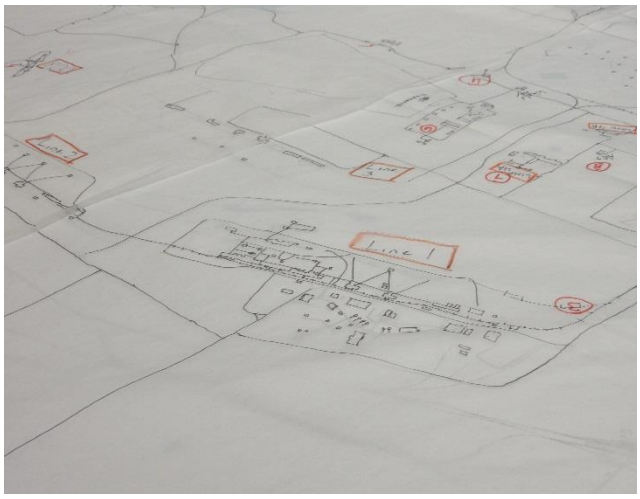
No buildings at IAAAP are included in the National Registry of Historic Places. However, IAAAP having a large number of World War II and Pre-War buildings, the DoD works closely with the Advisory Council on Historic Preservation (ACHP) to ensure that cultural resources are preserved where appropriate. ACHP has determined individual buildings located within each of IAAAP's production line areas do not require preservation.

3.7.2 ASSETS AND LIABILITIES

IAAAP identified and mapped "assets" and "liabilities" during the Vision Planning Workshop. Assets are aesthetic, functional, or operational positives that shall be preserved in the long-term planning effort. Assets identified are related to several attributes including production capabilities, the test firing range and installation produced utilities. Assets are shown in Figure 3-6.

Liabilities are visual or functional negatives that hinder day to day operations and quality of life and should be improved with proper planning. Liabilities identified related to the following: building locations, bridges and dams, and the overall age of the infrastructure. Figure 3-7 graphically depicts liabilities at IAAAP.

Stakeholders discuss installation assets.



Stakeholders discuss installation liabilities.

Stakeholders identify document building condition.

Stakeholders identify development constraints.

FIGURE 3-6: IDENTIFIED ASSETS PLAN

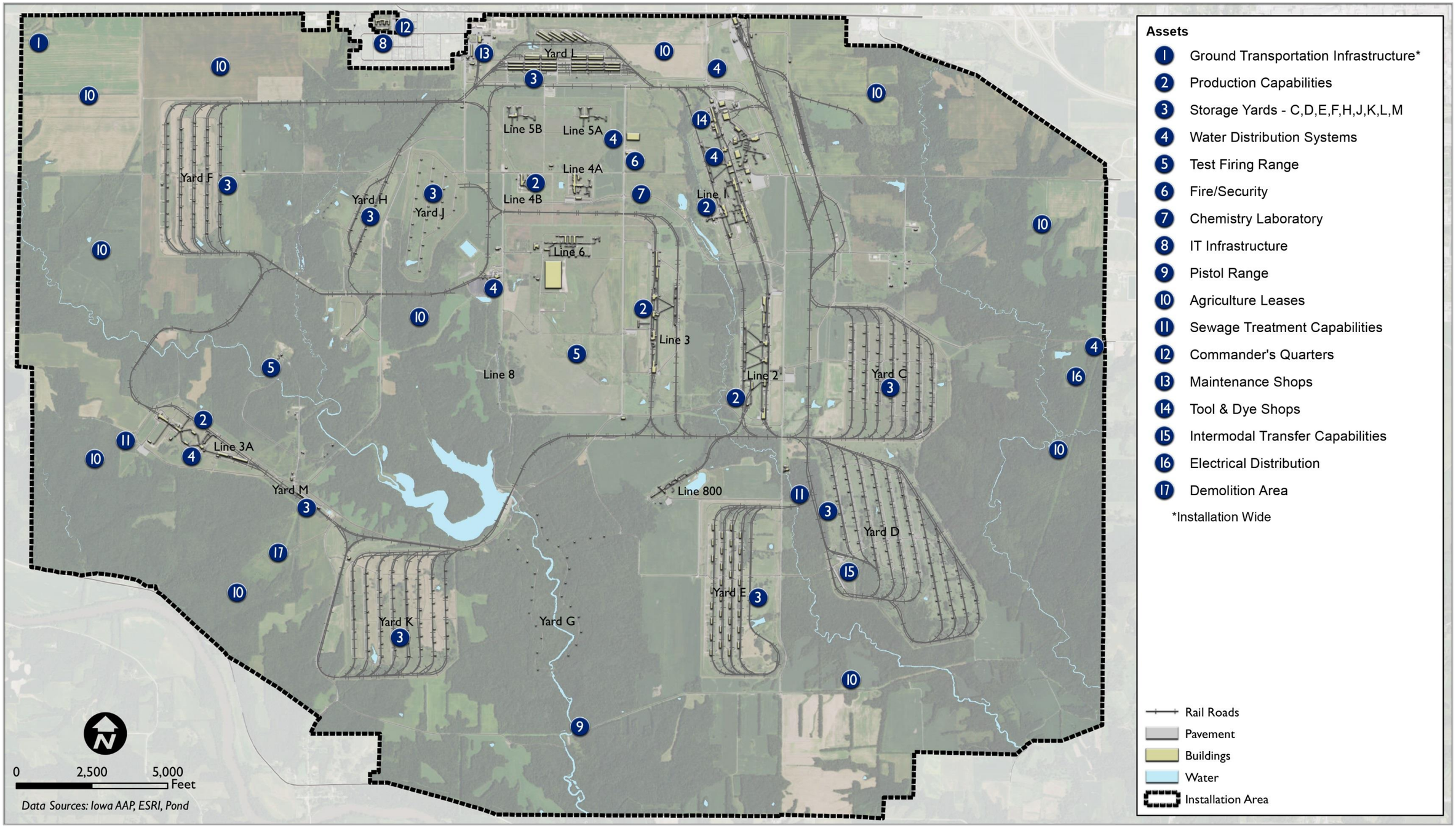
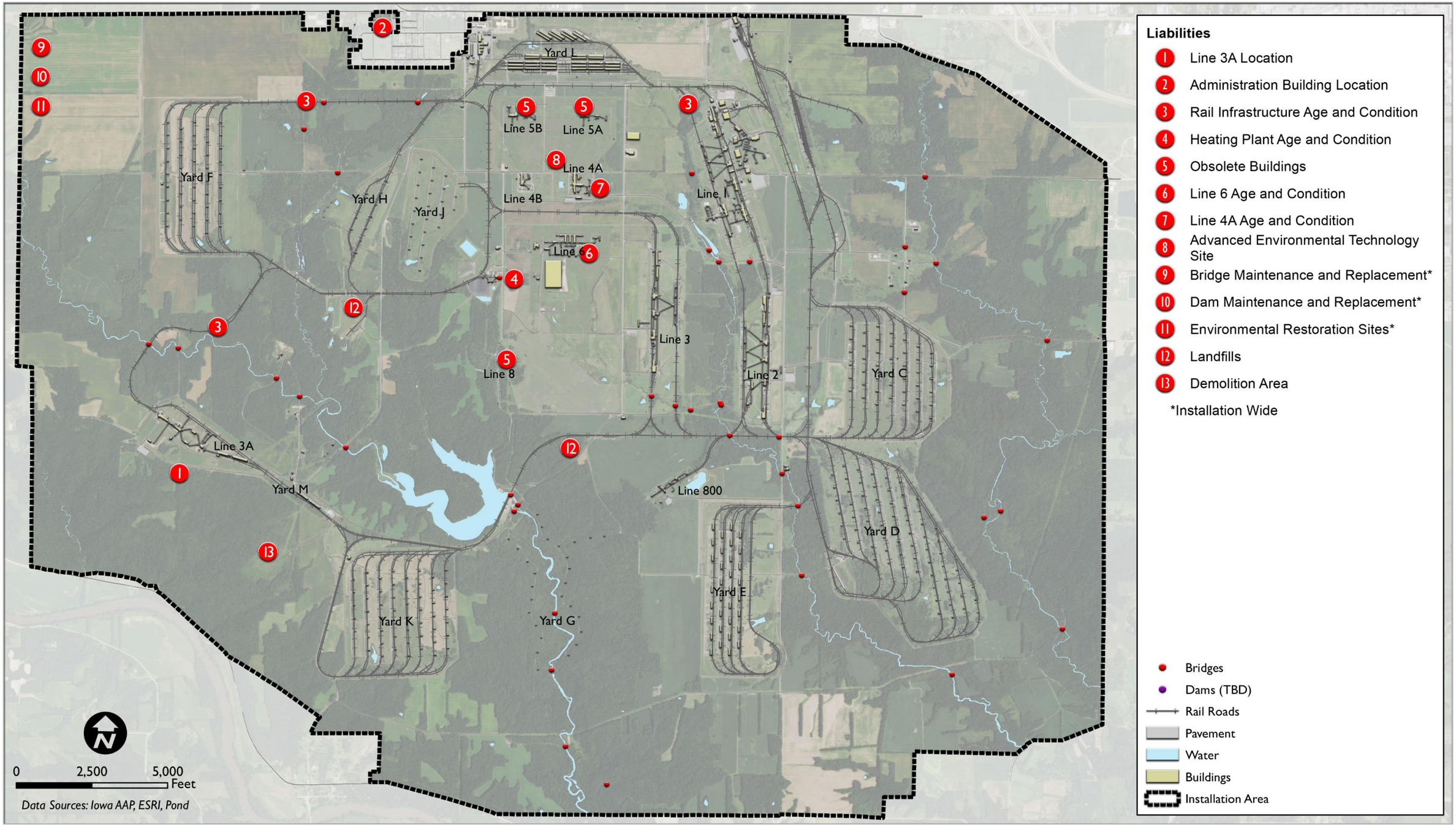
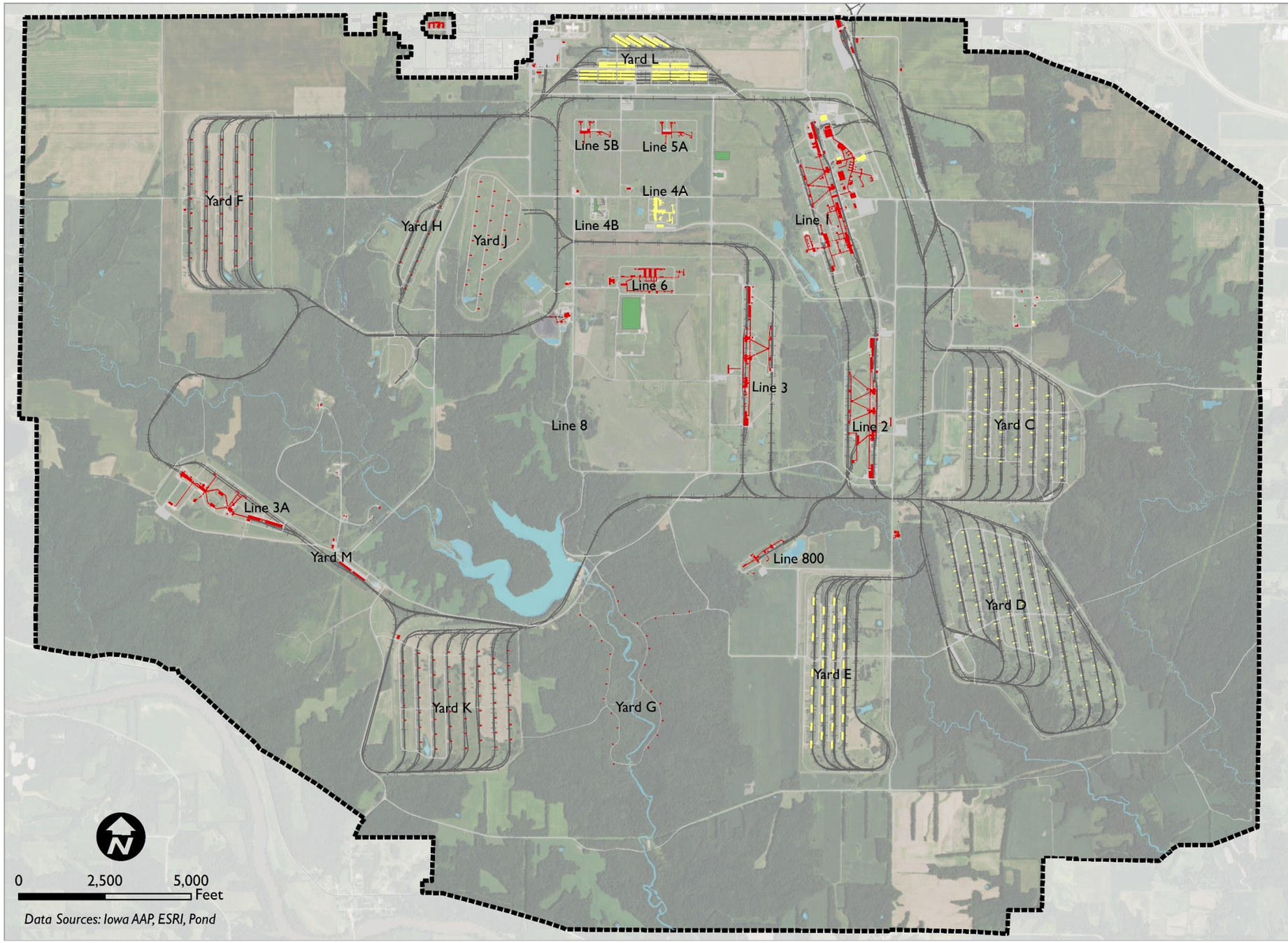


FIGURE 3-7: IDENTIFIED LIABILITIES PLAN



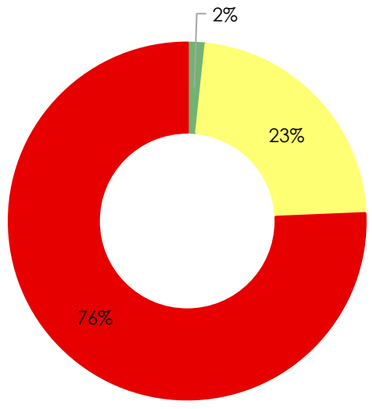
3.7.3 BUILDING CONDITIONS

FIGURE 3-8: BUILDING CONDITION



Building conditions were assessed by stakeholders based on a 20-year outlook. Buildings shown in green are considered to be in good condition and should be retained for 20+ years. Those shown in yellow are considered to be in moderate condition which may be demolished within 20 years. Buildings shown in red are considered to be in poor condition should be demolished within 20 years.

Of all buildings on-site, only 2% of the 945 structures were identified to be in good condition and likely enduring facilities into the long-range. Line 4B and all of its attachments were identified as the only buildings to retain. Additionally, 204 buildings throughout the installation (23% of all buildings) were said to be in moderate condition. Stakeholders assessed that all other buildings were unlikely to remain useful over the next 20 years.

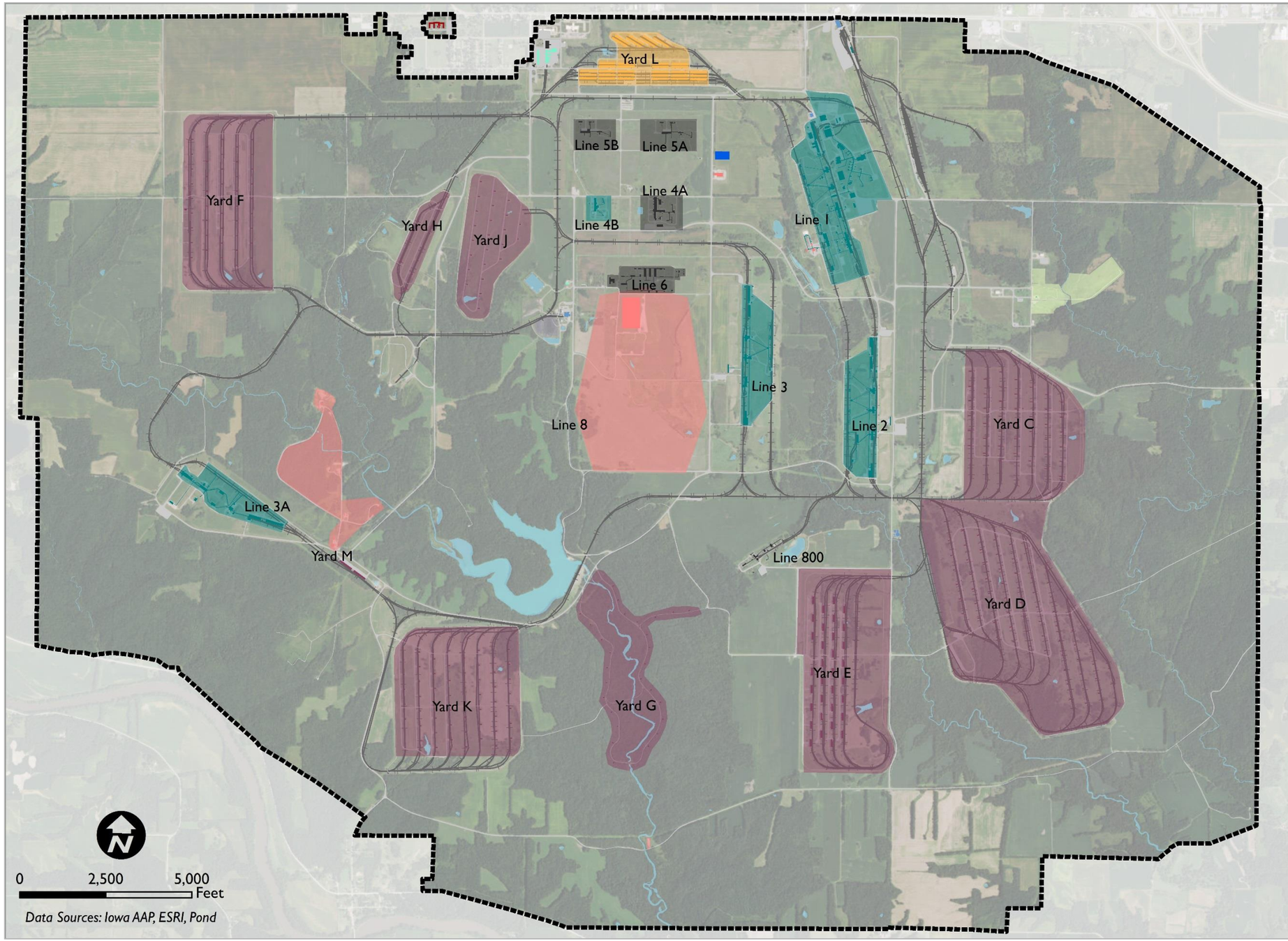


Building Condition: 20 Year Outlook

- Should Remain
- May Remain
- Will Not Remain

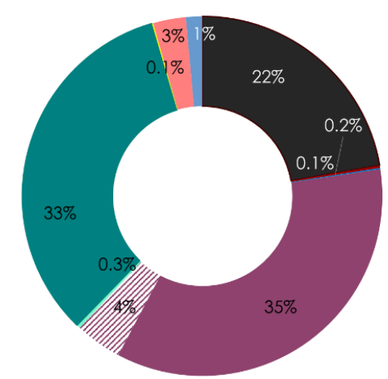
3.7.4 BUILDING USE

FIGURE 3-9: BUILDING USE



One method for determining the efficiency of land use is by assessing building use. IAAAP stakeholders categorized buildings as abandoned, administrative, emergency services, explosive storage, inert storage, maintenance, production, residential, testing/ research and development or utilities. These categories indicate where like functions are distributed across base and begin to develop a framework for land use and building design standards.

In general, production activities are concentrated in an area just northeast of the center of the installation. Explosive storage is maintained in separate storage yards distributed across the largely-undeveloped periphery of the installation. Inert storage is located at the north-most portion of the plant. Surprisingly, 22% of IAAAP's buildings, primarily concentrated near the main gate, are considered "abandoned."

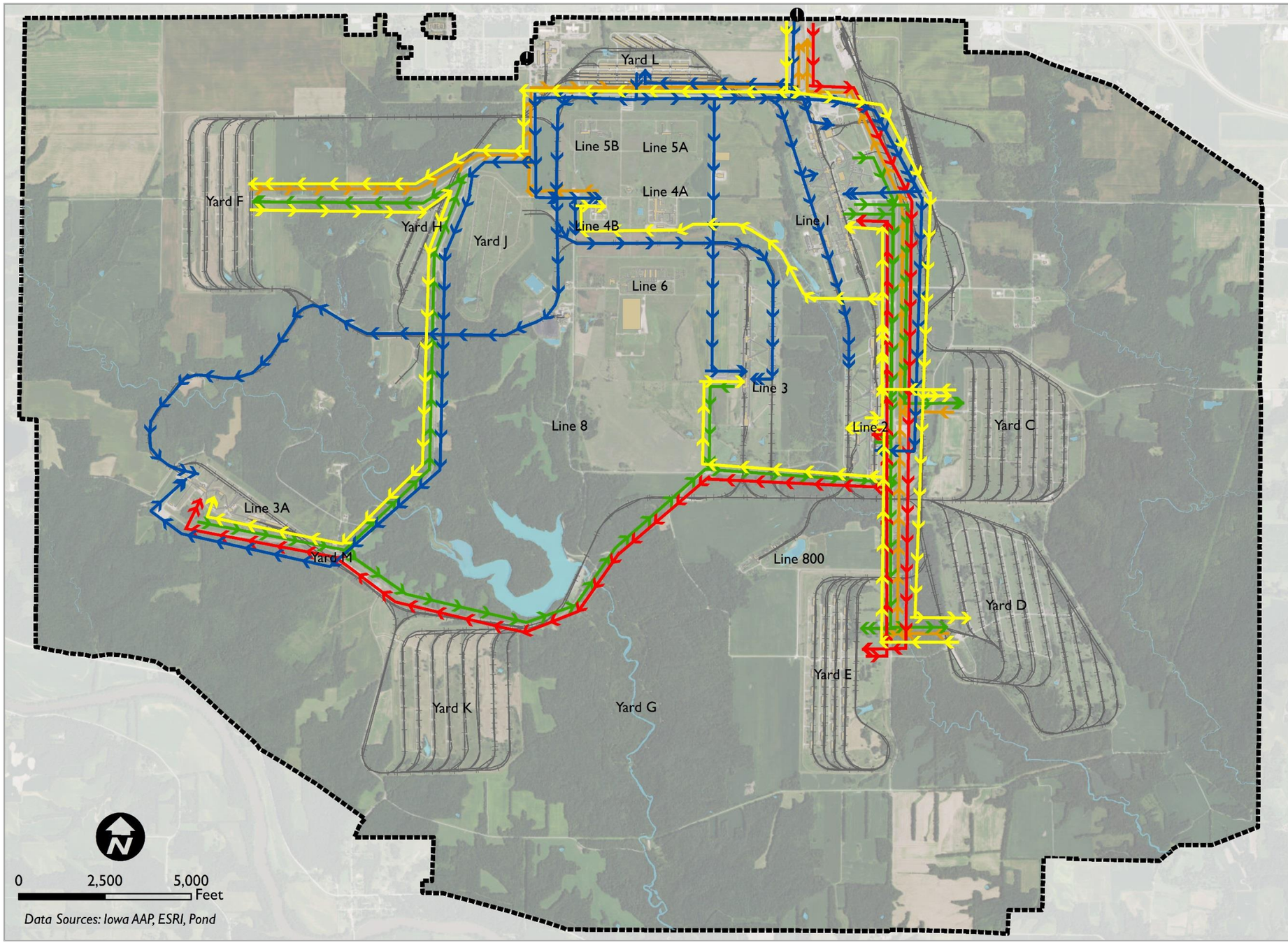


Building/Land Use

- Abandoned
- Administrative
- Emergency Services
- Explosive Storage
- Inert Storage
- Maintenance
- Production
- Residential
- Testing/R & D
- Utilities
- Waste Mngmnt.

3.7.5 INDUSTRIAL PROCESS

FIGURE 3-10: PROCESS FLOW



When considering the nature of the industrial work undertaken Iowa Army Ammunition Plant, aligning a process workflow between buildings can save time and money by reducing materiel travel and movement times between buildings during the manufacturing process. Employees will reap the benefit from a reduction of time wasted, greater in-house communication, and increased efficiencies in the production line.

Figure 3-10 identifies the current process workflow at Iowa Army Ammunition Plant. Strategic repurposing of existing facilities or development of new facilities with functional adjacency in mind may provide opportunities for increased efficiency in the process workflow. These opportunities should be further explored and identified in the area development planning process.

Currently, all materiel arrives by truck through a single gate at the north end of the installation. Materiel is initially brought to either the inert storage yard or one of nine storage yards for explosive materiel. From there it is distributed to production or testing areas throughout the plant. Finished products are moved by truck from the production lines and housed in explosive storage yards, before being transported offsite through the north truck gate.

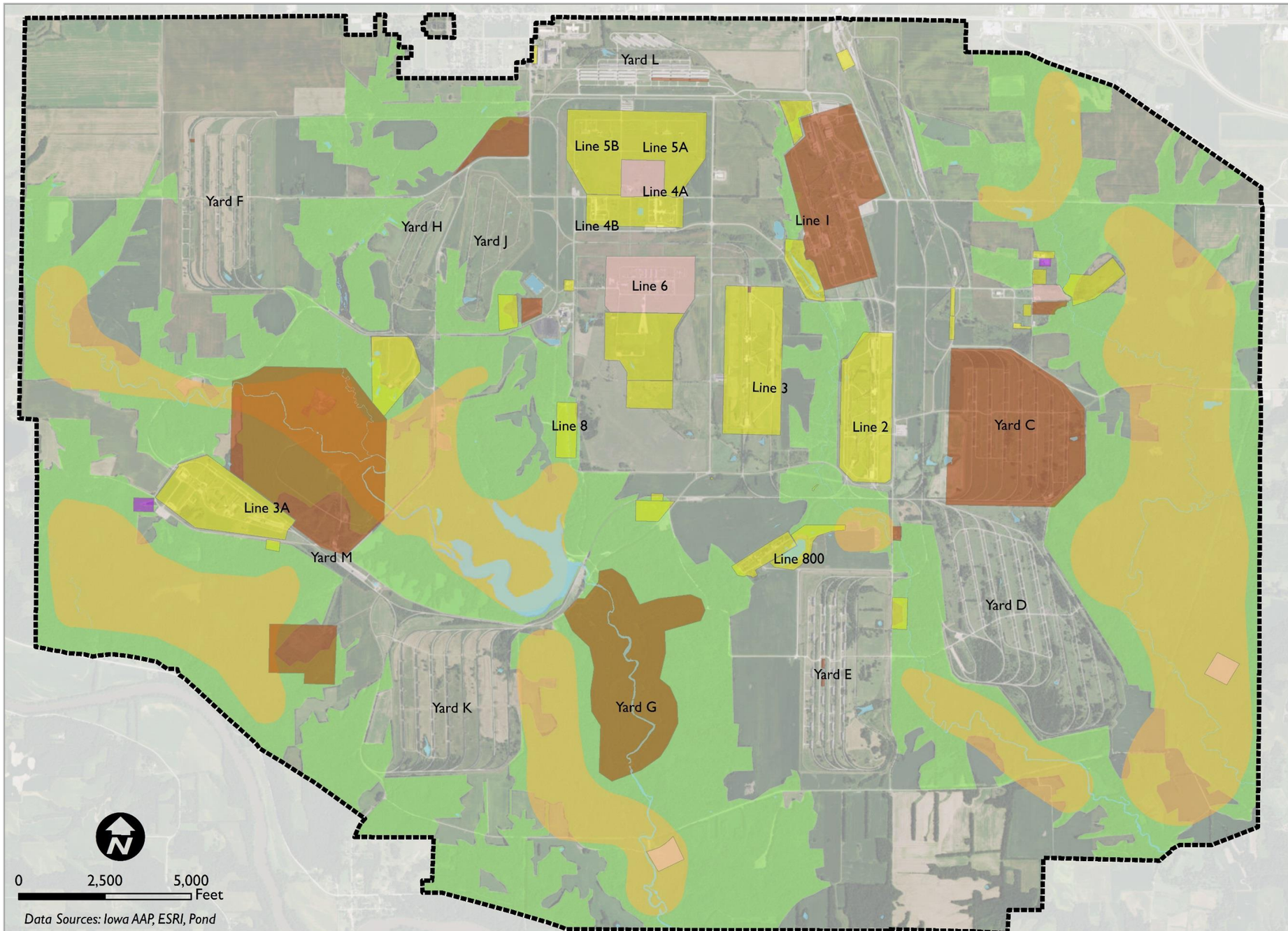
Access Control

Process Flow

- Finished Products
- HE
- Inert
- Outbound Products
- Propellant

3.7.6 ENVIRONMENTAL CONSTRAINTS

FIGURE 3-11: ENVIRONMENTAL CONSTRAINTS



Environmental constraints at IAAAP are both natural and manmade. Manmade constraints primarily consist of the various environmental remediation areas throughout the installation. The restoration efforts for each of these fall in to one of three programs: Formally Utilized Sites Remedial Action Program (FUSRAP), Installation Restoration Program (IRP), Military Munitions Response Program (MMRP). These areas are considered to be minor development constraints, as each is currently undergoing remediation. Throughout the site, though not pictured geographically in this figure, are a large number of small cultural resource areas. These areas vary in type, but many are burial locations for landowning families that inhabited the site before its conversion to an ammunition plant.

Naturally occurring constraints consist of the numerous small bodies of open water and several large areas containing steep slopes (15 degrees or greater). These are considered major constraints that significantly limit development opportunities. No wetlands are found onsite.

Environmental Constraints

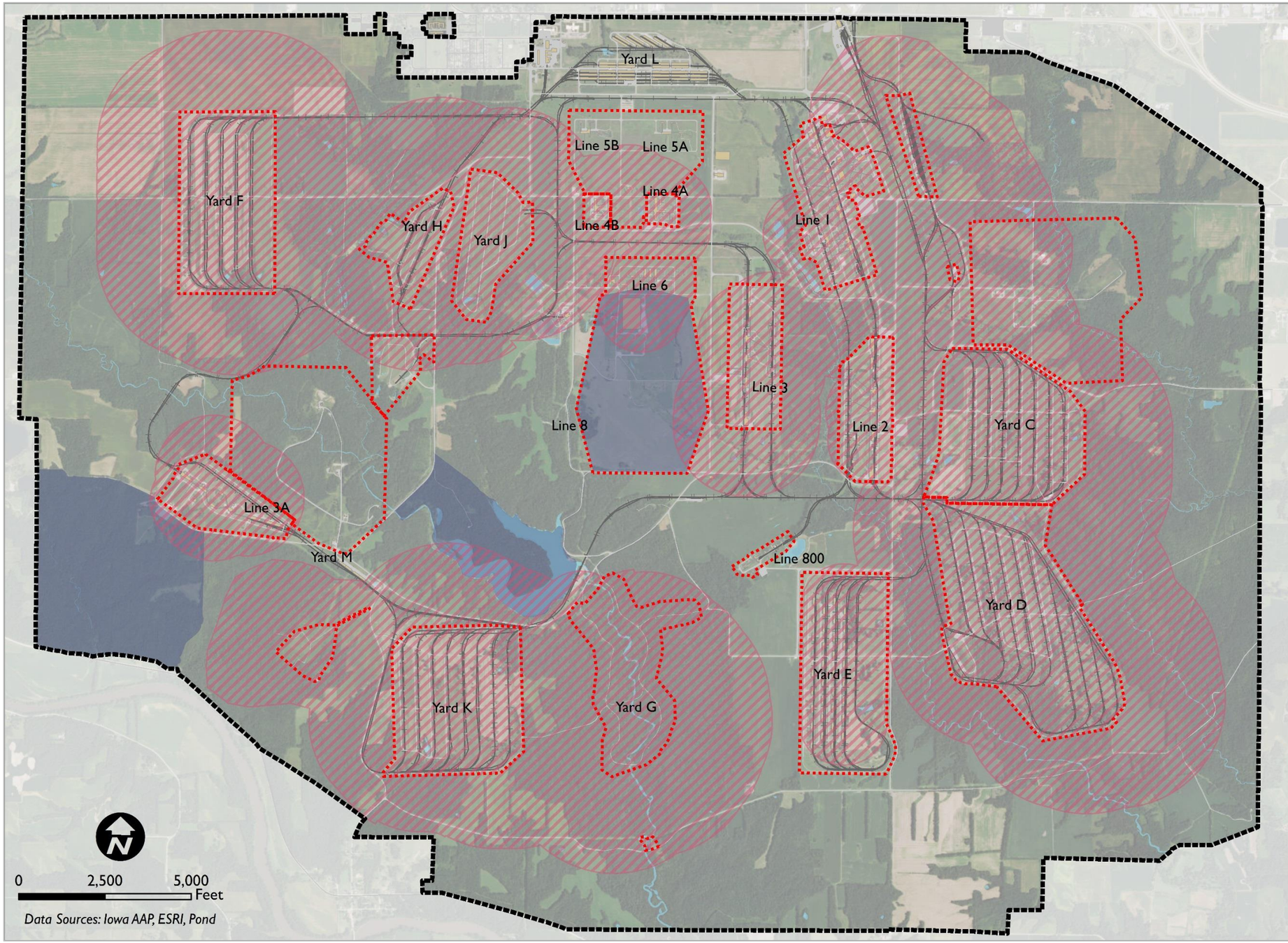
- Forested Area
- Terrain
- Water

Environmental Remediation

- CC
- IRP
- FUSRAP
- IRP/MMRP

3.7.7 OPERATIONAL CONSTRAINTS

FIGURE 3-12: OPERATIONAL CONSTRAINTS



Operational constraints are primary comprised of safety and security measures across the installation. As a manufacturer of explosive materials, much of the land at IAAAP falls within an explosive safety Quantity Distance (QD) Arc. These areas have specific land use controls designed to limit exposure to explosive risks. At IAAAP QD Arcs are considered only a minor development constraint, as most future development would likely require location within a QD Arc.

IAAAP also has a number of restricted areas throughout the plant. These primarily consist of the various production lines, storage yards, and testing areas in use.

Additionally, buildings regularly occupied by 11 or more people require an AT/FP standoff. While these requirements do not have a large impact on planning decisions at the Vison Plan stage, AT/FP standoffs should be taken into consideration in any site planning or design efforts.

Operational Constraints

- Restricted Area
- QD Arcs
- Military Range

3.7.8 COMPOSITE CONTRAINTS

FIGURE 3-13: COMPOSITE CONSTRAINTS

Combined Constraints include both environmental and operational constraints at IAAAP. When viewed simultaneously, the installation's large quantity of land area does not appear excessive. The storage, production, and testing of explosive materials requires several thousand acres of buffer land, to which IAAAP is well suited. Despite the large percentage of constrained acreage onsite, however, large areas of unconstrained areas are found across the plant.

Composite Constraints

Operational Constraints

- Military Range
- Restricted Area
- QD Arcs

Environmental Constraints

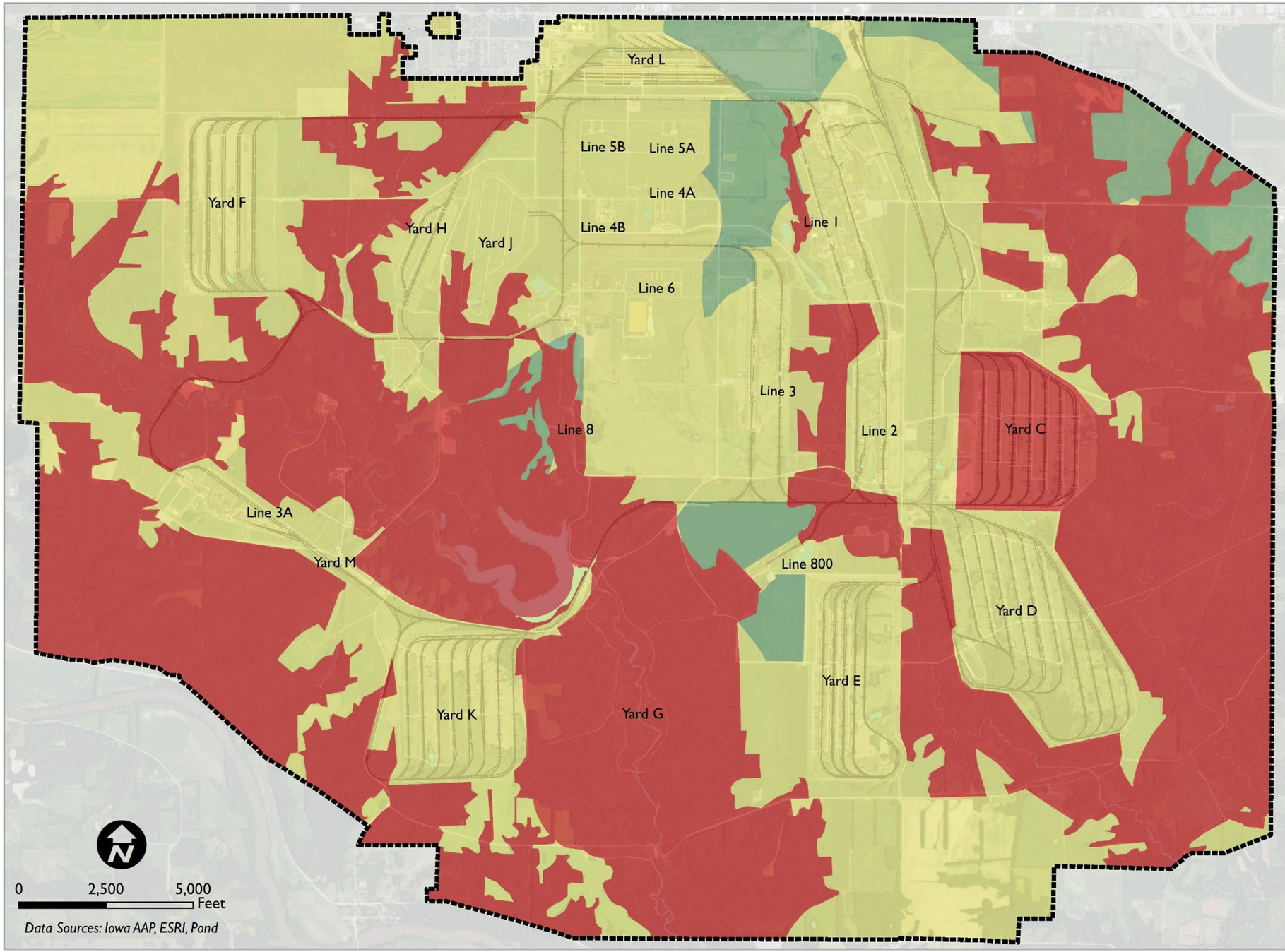
- Forested Area
- Terrain
- Water

Environmental Remediation

- CC
- IRP
- FUSRAP
- IRP/MMRP

3.7.9 DEVELOPABLE AREA

FIGURE 3-14: DEVELOPABLE AREAS



Stakeholders identified and analyzed existing built, operational, environmental and natural constraints present at the installation. These combined constraints, shown in Figure 3-14, inform the level of development potential across all areas of the installation. Stakeholders identified areas of high, moderate, and low development potential. These potential developable areas have been generalized in Figure 3-14 and are further described below.

HIGH DEVELOPMENT POTENTIAL areas are ready for development with minimal modifications to the existing site. In particular, development promoting adaptive reuse should be considered. At IAAAP vacant land in close proximity to existing utility lines was generally considered to have high development potential.

MODERATE DEVELOPMENT POTENTIAL areas include zones that can be developed after mitigation, and generally require more capital and time investment to execute. These areas also provide an opportunity for infill development to promote a more compact industrial site. Areas at IAAAP that are actively used for production or storage, located within a QD Arc, or vacant but lacking utility access were considered to have moderate development potential.

LOW DEVELOPMENT POTENTIAL areas are mostly unavailable for development due to location or cost. At IAAAP, steep slopes were identified as the most development-restrictive constraint. Stakeholders agreed that areas with sloped terrain were unlikely to ever be developed.

Developable Area Potential

- High
- Medium
- Low

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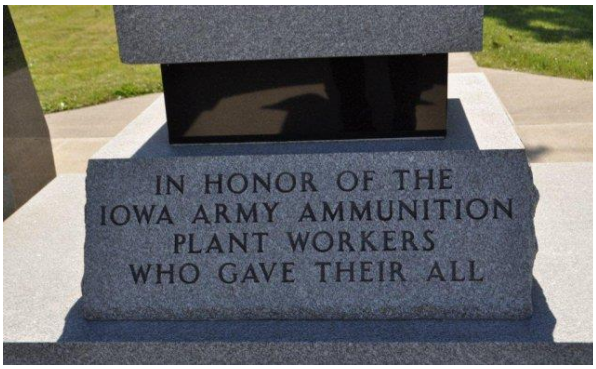
3.7.10 POTENTIAL FUTURE PROJECTS

The vision planning process illuminated both the strengths and weaknesses of established future plans, while at the same time identifying areas for improvement. Stakeholders worked together to develop a list of potential projects for the installation. In total, 11 potential projects were identified. These generally consisted of renovations to the existing built environment, such as revitalizing the rail, repaving roads, and rebuilding the administrative building. Stakeholders also proposed the building of a gauge lab/ nondestructive test lab and walking paths in the production areas. Figure 3-15 lists each of the 11 projects and notes their geographic location.

120mm Storage/Receipt

Melt Pour Process

120mm Chamber Gage.



Eagle Park Memorial

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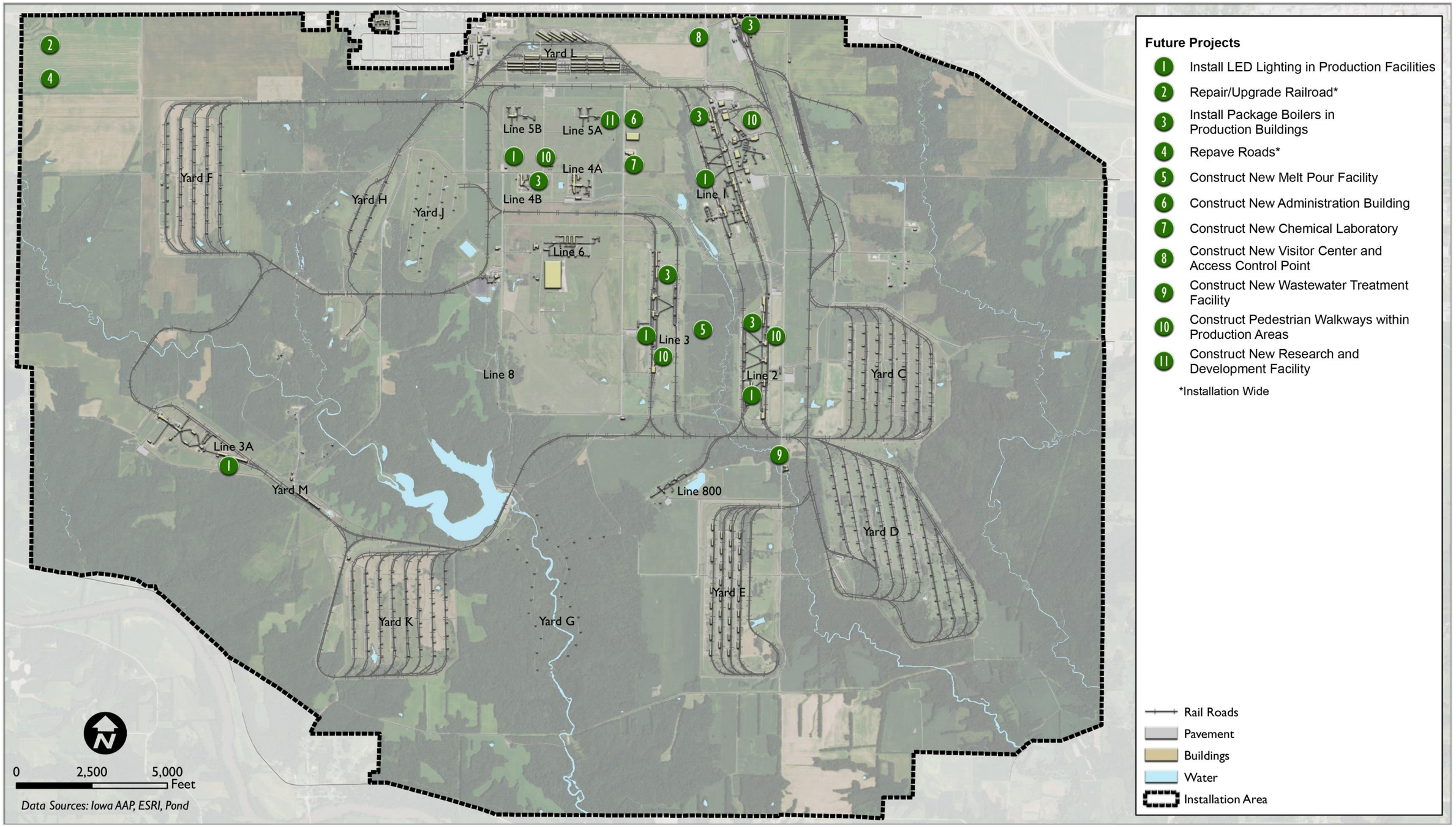
FIGURE 3-15: POTENTIAL FUTURE PROJECTS



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3.8 FRAMEWORK PLAN FOR FUTURE DEVELOPMENT

A Framework Plan is an outline that serves as a guide for future planning efforts. Input from stakeholders at the visioning workshop and site analysis of the installation provide the relevant data for creating a Framework Plan.

The elements identified in a Framework Plan have origins in historic American theory within an urban planning context. In support of the current UFC and Assistant Chief of Staff for Installation Management (ACSIM) guidance on community-based military master planning, five elements are presented that define how people conceptualize urban environments:

- **Paths** are routes along which people move. These include roadways, trail systems, waterways, transit lines, and railroads. Of the five basic elements, paths are often the strongest feature in identifying an urban environment.
- **Edges** are linear elements that do not function as paths, but serve to separate features through a delineation in scale, material, or elevation. Edges may be either solid or permeable.
- **Landmarks** are prominent features that aid urban navigation. Normally, landmarks are not occupied spaces; rather, they are features in the environment (either built or natural) that serve as "wayfinding" devices.
- **Nodes** are centers of activity that are suitable for gathering. These can be found in the form of public plazas, transportation hubs, or intersections of paths.
- **Districts** are moderately-sized areas within a larger urban context that share a common identity. A district is often comprised of multiple uses and is identifiable by features that distinguish it from neighboring districts. Districts can be used to identify stand-alone subsets of an installation for execution of individual area development plan.

Combined, these elements constitute what is referred to as "imageability," or the ability to construct a mental map of a place. Also relevant in determining the legibility of a location is the concept of "wayfinding," or the ability for a user to navigate an environment through features found in the landscape.

Places with strong implementation of paths, edges, districts, nodes, and landmarks are easily navigable and imprint a positive image in the mind of its users. Therefore, when planning for the future development of an installation, it is important to consider the preservation of existing elements and insertion of new elements that enhance the legibility of a place.

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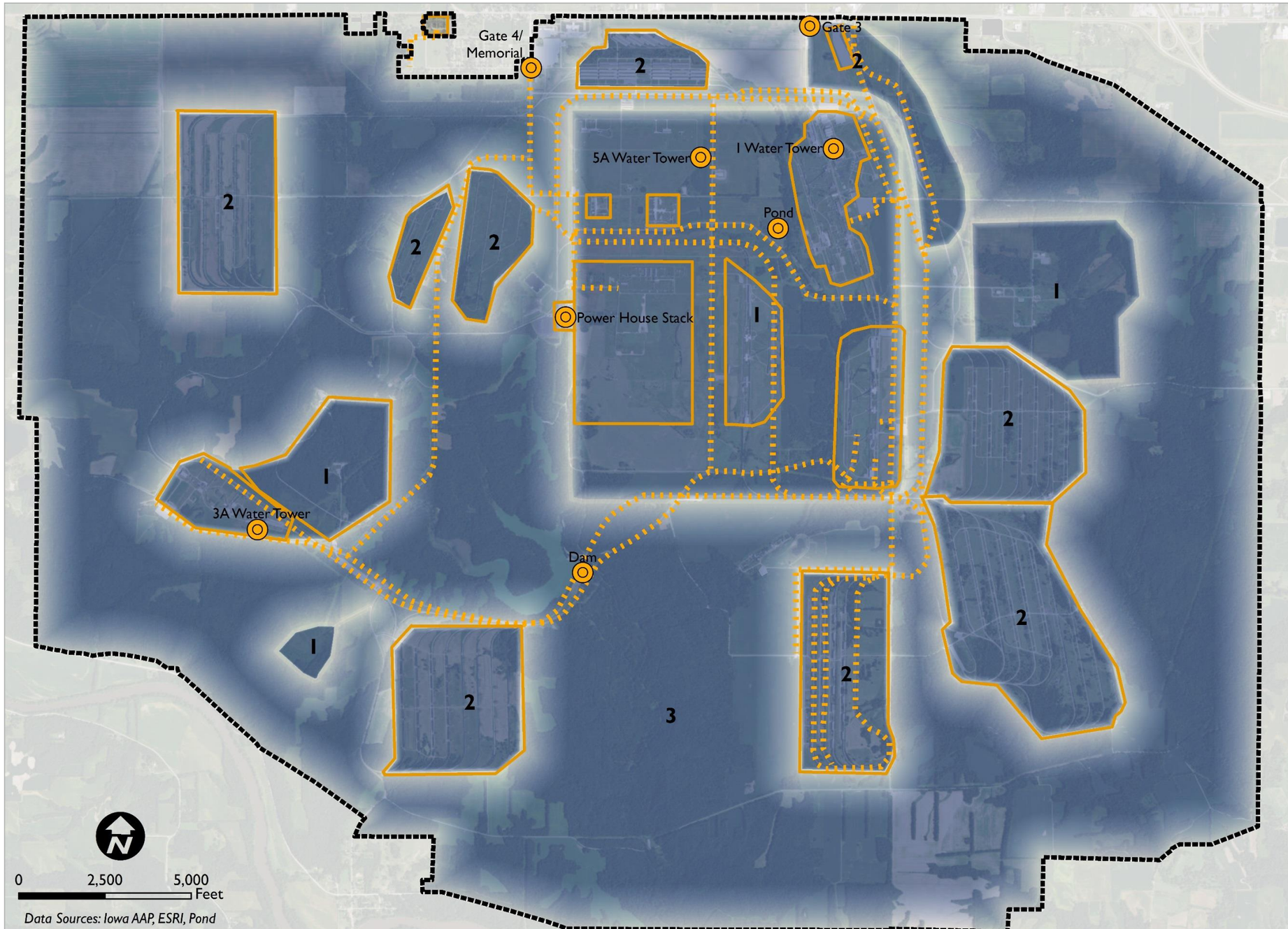
FIGURE 3-16: FRAMEWORK PLAN



Workshop participants worked collaboratively to identify and record Paths, Edges, Landmarks, Nodes, and Districts at IAAAP.

Paths generally followed well-travelled roadways. Edges primarily equated to the fence lines of the numerous restricted areas throughout the plant. Landmarks often correlated to large visible pieces of infrastructure, such as water towers, access control gates, or the dam.

Workshop stakeholders divided the installation into three planning districts, organized by priority:

1. Industrial Core District
2. Logistics/Storage District
3. Agricultural/Natural Resources District

The Industrial Core District encompasses all of the centrally located production and testing areas, along with separated Production Line 3A. The Logistics/Storage District is comprised of nine separate sub-districts throughout the plant that house all inert storage, explosive storage, and shipping and receiving functions. The land area that remains, largely undeveloped or leased to outside agriculture companies, was designated as the Agriculture/Natural Resources District. Stakeholders determined that the Industrial Core District, where most of the IAAAP mission is carried out, should likely be the primary focus of future Area Development Planning.

Landmarks
Edges
Paths
Districts

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4 RECOMMENDATIONS FOR THE PATH FORWARD

Additional efforts noted below should be completed in conjunction with future Master Planning efforts at the installation:

- Numerous buildings at IAAAP are in poor condition and beyond their useful life. Continue to update and implement the facility reduction plan to demolish obsolete structures.
- Complete a facility utilization survey to identify the location and amount of unused or underutilized space. Results of the survey can be used to inform relocation of production operations within existing facility space to increase operational efficiency, and identify potential capacity to support new mission sets or tenant activities.
- Accurate reporting of real property assets is essential for establishing auditability for construction, sustainment, and modernization funding. Real property requirements and installation assets reported in RPLANS should be validated and updated as necessary. Any identified surpluses or deficits should be balanced in the Area Development Planning process.
- A Utilities and Transportation Infrastructure Capacity Analysis (ICA) should be conducted as part of any future planning processes to ensure sufficient infrastructure is in place to support proposed development.
- Investigate the feasibility of developing alternative sources of energy in planning new facilities at the installation. Additionally, the installation may be eligible for incentives for incorporation of certain building systems and designs that reduce energy consumption, but may also accommodate improved building heating, cooling and lighting.

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5 APPENDICES

5.1 APPENDIX A – ACKNOWLEDGEMENTS

This study could not have been completed without the insights and contributions of many throughout the installation including:

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Leanna Lopez, ACO
LTC Aaron Wolfe, Commander
Max Kamrath, AO
Mel Gibson, AO
Milton Hicks, ACO
Orlyn Akers, ACO
Randy Doyle, ACO
Steve Bellrichard, ACO
Steven Evans, AMC
Tony Noll, AO

5.2 APPENDIX B – LIST OF ACRONYMS

ACHP	Advisory Council on Historic Preservation
ACO	Army Contracting Office
ACSIM	Assistant Chief of Staff for Installation Management
AMC	Army Materiel Command
AO	American Ordinance
ARMS	Armament Retooling and Manufacturing Support
ASIP	Army Stationing and Installation Plan
AT/FP	Anti-Terrorism / Force Protection
BAECP	Burlington Atomic Energy Commission Plant
BNSF	Burlington Northern Santa Fe
CATCODE	Category Code
CPTED	Crime Prevention Through Environmental Design
DoD	Department of Defense
FUSRAP	Formally Utilized Sites Remedial Action Program
FY	Fiscal Year
GDOTS	General Dynamics Ordnance and Tactical Systems
GIS	Geographic Information Systems
GOCO	Government Owned, Contractor Operated
IAAAP	Iowa Army Ammunition Plant
ICA	Infrastructure Capacity Analysis
IRP	Installation Restoration Program
JMC	Joint Munitions Command
LAP	Load, Assemble, Pack
LQ	Location Quotient
MILCON	Military Construction
MMRP	Military Munitions Response Program
NAICS	North American Industry Classification System
NCO	Noncommissioned Officer
NRHP	National Register of Historic Places
PBS	Production Based Support
PN	Personnel

QD	Quantity Distance
ROI	Return on Investment
RPI	Real Property Inventory
RPLANS	Real Property Planning and Analysis System
SF	Square Foot
SHPO	State Historic Preservation Office
SWOT-V	Strengths, Weaknesses, Opportunities, Threats, and Vision
SY	Square Yard
TBD	To Be Determined
TDA	Table of Distribution and Allowances
TOE	Table of Organization and Equipment
UFC	Unified Facilities Criteria

5.3 APPENDIX C – MASTER PLANNING PROCESS SUMMARY