

NATIONAL BIO AND AGRO-DEFENSE FACILITY (NBAF)



Location: Manhattan, Kansas (under construction)

Core Competencies: Diagnostics, Training, North American Vaccine Bank, Basic and Applied Research, Vaccines and Agriculture Biological Countermeasures, and Vaccine Licensure

Key Customers: U.S. Livestock Producers, National Veterinary Stockpile, National Animal Health Laboratory Network, FBI, USDA ARS and APHIS, Private Industry, and Academia

Protecting the Nation's Food Supply Against All Threats

The United States needs to be on the front line of livestock animal health research to defend against foreign animal, emerging, and zoonotic diseases. The National Bio and Agro-Defense Facility (NBAF) is envisioned as a state-of-the-art biosafety level (BSL) 3 and 4 facility that will enable the United States to conduct comprehensive research, develop vaccines and anti-virals, and provide enhanced diagnostic capabilities to protect our country from numerous foreign animal and emerging diseases. As a replacement to the aging Plum Island Animal Disease Center (PIADC), NBAF will provide additional capabilities that are not currently available in the United States, including BSL-4 space for livestock and a vaccine development module. The NBAF will be the nation's only large animal BSL-4 facility built to safely handle pathogens that do not currently have treatments or countermeasures.

Construction

The NBAF will provide safe, secure, and state-of-the-art agriculture biocontainment laboratories that research and develop diagnostic capabilities for foreign animal and zoonotic diseases. The facility will augment the existing bio-defense complex by adding large animal biosafety level 4 (ABSL-4) and vaccine development facilities, which are presently lacking. Both of these capabilities will enhance the related DHS risk-characterization and forensics capacity in order to better meet the mission.

With the award of the construction contract for the Central Utility Plant (CUP) in February 2013, DHS reached an important milestone in the NBAF timeline. Funding for the CUP showcases the collaborative nature of the NBAF as the contract was awarded using both congressional appropriations and gift funding provided by the State of Kansas. The 87,000-square-foot CUP will house the primary heating and cooling systems as well as the emergency generators for the main lab building. DHS is also moving forward with the process to award the main laboratory construction contract in 2015. In fiscal year 2014, \$404 million was received for laboratory construction. To help alleviate the federal cost burden, the State of Kansas agreed to commit more than \$300 million of gift funding toward the total NBAF construction project. At peak construction, NBAF will employ 1,000 people.

Design

After a comprehensive three-year federal examination of potential sites that focused on the environmental impacts, threats, and risks of operating the NBAF, the Department of Homeland Security (DHS) selected a site located within the Animal Health Corridor on the campus of Kansas State University. DHS developed an iterative risk assessment process to ensure that the NBAF is safe, secure, and operable over its entire life cycle. Significant design features beyond the industry standard were incorporated into the NBAF design to reduce risk. For example, the biocontainment areas are designed to meet structural and containment building integrity standards similar to those used in the nuclear industry. By adhering to these standards, the final design minimizes the potential for accidental release from the research laboratories.

Operations Will Begin in 2022

Current operations at PIADC will continue through NBAF construction. DHS is developing a plan to ease the transition from PIADC to NBAF that includes an overlap of operations to ensure there is no interruption of the critical science mission. DHS will not build or operate the NBAF unless it can be done in a safe manner. No select agent permits will be issued by the U.S. Department of Agriculture or the Centers for Disease Control and Prevention until all requirements are met. NBAF will be government owned-government operated with contractor support. When fully operational, NBAF will employ 400 people.

Contact

Questions? For more information, visit <http://www.dhs.gov/nbaf> or email NBAFProgramManager@dhs.gov.

PROJECT FACTS

Biocontainment Biosafety Levels (BSL) 2, 3, 3Ag and 4. Level 4 does not exist in current facility at Plum Island.

Construction Technology

- Single-source schedule can provide high-level outlook down to daily crew level schedules. Single-source means everyone is up-to-date, but still has a schedule that is useful to them for that day and for planning ahead. The schedule is also cost-loaded to improve billing.
- With GMP 3, parts of the schedule will be tied into the model, which will provide visualization when forecasting and coordinating work. It is integral to sequencing and coordinating construction activities. The model is used in weekly superintendent meetings and throughout the course of construction and will be handed over to NBAF upon project completion for managing all facilities. The construction model will also help to bring new workers on site up to speed more quickly, which is valuable on a large project.
- An electronic dashboard allows the team to quickly access the most current safety information, schedules, drawings, etc. It is accessible in the portable field kiosk and to the Design and Construction team, the Owner and all stakeholders, as well as all trade partners.
- Modeling is a robust effort with a dedicated BIM trailer on site to house 30 modelers. The purpose is to increase communication among all team members, provide efficiencies to the project and maintain productivity. An example is modeling reinforcing steel so the team knows steel sizes prior to fabrication. Modeling also allowed the electrical ductbanks and other major piping section in the utility plant to be prefabricated and installed in sections.
- The team will utilize BIM 360 Field to perform safety inspections, quality verifications and punchlists in the field utilizing iPads.
- The project team will utilize McCarthy's Project Management software Teamsight to collaborate with all stakeholders. Teamsight will be used for RFI's Submittals, Meeting Minutes, etc.

Construction Type

Facility is cast-in-place concrete with a structural steel frame to "harden" the structure. Built to NRC standards. Includes blast resistance standards.

Self-Perform

MCMJV will self-perform concrete and site logistics work.



PROJECT FACTS

Safety MCMJV is participating in an OSHA Partnership. Safety protocol is in alliance with Department of Defense standards, which also aligns with MCMJV's comprehensive safety program. Current project RIR is 2.16 and LTIR is 0. For comparison purposes, industry standard is RIR 3.8 and LTIR 1.50.

Location The Manhattan location puts the NBAF in proximity to research of NBAF-related missions in veterinary, agriculture and bio-security research expertise, and resources. The stretch from Columbia, Missouri to Manhattan, Kansas is defined as the Animal Health Corridor. This location also puts NBAF in proximity to a major hub of the veterinary pharmaceutical industry. The NBAF will be built adjacent to the existing Kansas State University BSL-3Ag Biosecurity Research Institute.

Subcontractor Participation Project to date through 3.31.15 – Percentage of Subcontract values

- 71% small business
- 29% large business
- 63% from Kansas or Kansas City area
- 32% from outside of Kansas and Kansas City area
- 4% from Manhattan area

Labor Participation

- 14% Minority and Women on-site labor participation.
- 370,000 on-site labor hours through March 2015.
- 908 workers have received safety orientations to perform work on site through March 2015.
- Approximately 1,000 construction workers will be on site during peak construction activity.
- Facility will employ approximately 400 people.

Sustainability Designed to USGBC LEED Silver certification standards. The team worked with Area Transportation Agency, the local public transportation agency, to add a stop at NBAF to their route. The team performs recycling and sorts materials on site, and tracks low volatile organic compounds (VOC) and regional materials use. A baseline energy model was developed by a consultant so the team can track energy efficiency and savings over time.

Community Involvement The MCMJV project team has participated in Habitat for Humanity on numerous occasions and helped construct the Manhattan Partner City Flag Plaza at City Park in Manhattan, KS.