

# New Mexico Department of Agriculture Administrative and Laboratory Building New Mexico State University Campus

Conceptual Programming Study  
December 28, 2009



**SMITHGROUP**

architecture engineering interiors planning

STUDIO  
**SW**  
ARCHITECTS

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# A. Executive Summary

## Overview

This conceptual programming study for the New Mexico Department of Agriculture (NMDA) located on the New Mexico State University (NMSU) campus in Las Cruces, New Mexico, contains drawings, program narrative and data, cost estimates, systems information, Leadership in Energy and Environmental Design (LEED) sustainability information, and a project cost projection for the renovation and expansion of their current facility. The design is the outcome of extensive interaction with the executive committee, the division directors, representatives from the University Architect's Office, user groups, and staff. The proposed design carries forward the goals of the university master plan.

The NMDA addition and renovation is envisioned to provide the necessary laboratory technical and administrative spaces for this economic development and regulatory agency. The divisions include Marketing and Development (MD), Agricultural Programs and Resources (APR), Agricultural and Environmental Services (AES), Standards and Consumer Services (SCS), Dairy, and Veterinary Diagnostic Services (VDS). Included in the program is a stand alone equine chemistry testing lab with its own entry and parking area. A, the building is designed with the goal of achieving LEED silver certification.

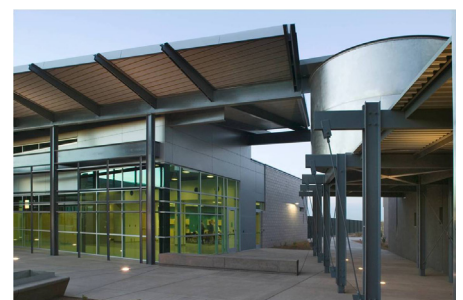
## Approach

The concept design solution provides an economical approach to optimizing the combination of laboratory, technical, and administrative spaces with an addition to and renovation of the existing facility. These functions are enhanced by courtyards and visible public access.

Exterior expression of the NMDA building is specifically designed to reflect the character and landscape of the campus; the shade structure at the entry and south side of the building respond to the local climatic conditions. Skylights and clerestory windows provide light into interior rooms and hallways. New exterior windows in the existing structure open up those spaces to the outside as well as provide natural daylighting. The exterior massing of the addition is consistent in scale with the existing building. Energy-efficient glass is utilized to provide a controlled natural light source to the new labs and offices. Laboratories are modular and flexible in design. The addition and renovation is designed to accommodate project phasing. Images from the local agricultural industry can be seen in the site courtyard design and the exterior material selection.

Finally, the concept design carefully considers sustainable "green" design principles in all regards, including energy-efficient mechanical and electrical lighting and power systems, high performance glass, architectural and tree shading, water conservation and low-water landscaping, and indoor air quality.

On behalf of the design team of Studio Southwest Architects and SmithGroup, Inc., we thank the Secretary of Agriculture, the executive committee, University Architect's representatives, division directors, and staff for their participation. This concept design report is the combined and successful result of all who worked cooperatively and creatively to provide the results shown in this document.



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## B. Project Justification

### NMDA History and University Connections

The 1911 State Constitution created a department of agriculture. In 1955 the NMSU Board of Regents unified a number of regulatory services and the individuals responsible for them under a single administrative organization — the New Mexico Department of Agriculture. Since March 1978, the director of NMDA has served as the secretary of agriculture on the Governor’s Cabinet. As such, the director/secretary is the agricultural industry’s official representative to state and federal government.

NMDA protects New Mexico agriculture and the food supply through inspections, laboratory diagnostics, and advice for policy formulation. NMDA is actively engaged with industry in the development and implementation of federal and state policies and regulations.

NMDA is a producer-consumer service and regulatory department under the NMSU Board of Regents and is responsible for certain statutes legislated over the last half century. NMDA’s mandate has changed over the years since its creation. Services have expanded in reaction to changes in population, needs of agribusiness activities, and dynamic economic conditions.

The relationship between NMSU and NMDA is unique and special. NMDA is an integral part of the university. This fosters progressive, responsive, and comprehensive programs which serve the ever-changing need of the state’s cornerstone industry - agriculture. The strategic plan developed by NMDA not only sets the course for the department’s future service but also provides direction for the university as a whole.

### NMDA Mission and Values

#### **Mission**

As a constitutionally established, cabinet-level agency and as part of NMSU, NMDA is dedicated to serving the citizens of New Mexico and enhancing the food and agricultural industry. The agency:

- Ensures a safe and secure food supply and a uniform and fair market place.
- Protects natural resources and the environment.
- Promotes marketing and trade domestically and internationally.
- Works cooperatively with all levels of government and tribal entities, private industry, and the public.

#### **Values**

*Professionalism:* NMDA is committed to carrying out its vision and mission by providing the highest quality services to the food and agriculture industry and the public.

*Service:* NMDA supports the well-being of its constituents and the public through efficient and effective use of its resources.

*Leadership:* NMDA provides a visionary, innovative, and responsive environment to serve constituents, the public, and its employees.



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## B. Project Justification

### Strategic Plan

The mission of NMDA constitutes its identity, and the NMDA strategic plan helps guide the fulfillment of this identity. The strategic plan identifies the following priorities:

1. Global marketplace development
2. Food safety and food security
3. Natural resources and environmental quality
4. Food health and consumer awareness
5. Economic development and value-added processing
6. Agency leadership and management capacity
7. Regulatory compliance
8. Alternative energy

### Equine Business Plan

To maintain the integrity of horse racing, it is recognized that the well-being of animals and humans involved must be ensured; and further, that horse-racing performance be unaltered by medications or other performance enhancing substances. Certain classes of drugs are strictly prohibited for use in performance horses. However, other medications used therapeutically are violations only if they are detected at the time of racing. The growing concern of effects of low levels of medication on performance emphasizes the need for pharmacologic research to advance current understanding and to promote equine welfare. Furthermore, in more progressive racing jurisdictions in the United States, it is mandated that all race horses that die (or are euthanized as a result of injury) while racing or in training be necropsied to verify cause of death. The drug testing and necropsy procedures also help to rule out potential illegal medications as being a factor in these problems; however, this is not a current requirement in New Mexico. The New Mexico Racing Commission has indicated an interest in moving forward with a more progressive overall testing and monitoring program, as horse racing is a growing and prospering industry in the state.

In April 2007, the NMDA was issued a directive by then President Michael Martin of NMSU to “get an equine chemistry testing laboratory project” underway. A tentative plan was developed with several different buildings at NMSU being identified as potential laboratory sites. A consultant, Dr. Walter Hyde of Iowa State University Racing Chemistry Laboratory (ISU-RCL), was employed due to his experience in developing and running the Iowa Equine Chemistry Laboratory for several decades. Each proposed site was evaluated for space, renovation costs, and overall feasibility. Initially, the idea was to renovate one of these sites for an interim laboratory; ultimately, it was hoped that a new facility would be developed as part of the proposed new NMDA building. Each of these sites was discarded due to lack of feasibility and the economic realities they presented. In summer 2008, the project scope was to renovate the existing NMDA building, build on an addition, and in this addition locate the new New Mexico Equine Chemistry Testing Laboratory (NMECTL). Financing for developing plans for this version of the project was budgeted as a capital outlay project, and this is where the project currently stands.

In summary, work has been ongoing since the original directive by President Martin of NMSU; several different sites have been carefully evaluated and discarded; and the existing NMDA building, plus a suitable addition, will be the home of the proposed NMECTL.



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## B. Project Justification

### Existing Building Conditions

The existing one-story building is approximately 28,000 square feet (sf) consisting of offices, laboratories, and support spaces. There is a basement which houses some of the HVAC equipment.

The building has received some small additions on the north side and numerous interior remodel projects. There have also been electrical and mechanical upgrades to keep up with developmental changes made in the laboratories and technology requirements.

The building has concrete masonry exterior load bearing walls which are covered with a stucco finish. The structural system is comprised of load bearing columns supporting steel girders and roof joists. When the building was constructed, there was a bank of active solar hot water panels distributed over a major portion of the roof. These panels were removed a number of years ago after many problems with the panels, operation of the system and roof leaks. The basement still houses the water storage tanks which were used in conjunction with the solar panels and heating system. The interior walls are predominately steel stud drywall partitions. A few interior walls are concrete masonry units. The limited exterior glazing is single pane glass in hollow metal frames.



*Existing building exterior*

The roof has been repaired and re-roofed and currently shows no sign of leaking or major wear. The materials on the interior of the building show years of wear and tear with some repairs very evident.

Lighting is not very efficient in either the distribution or the fixture type. The current fixtures are not a standard quality light source or energy-efficient. There is a lack of required power in a few areas and previous alterations and upgrades have not stayed current with the demand.

The flooring for most of the facility shows its age from years of use. The flooring in the laboratories is not up to current health safety standards. The ceilings also have a dated appearance similar to the other interior materials.

The spatial requirements of the various divisions are not being met by the current square footage available, the layout of the spaces and the adjacencies to other divisions. The administrative spaces also have similar issues. The laboratories have fit into spaces which are undersized and not supplied with the current standards for heating, air conditioning, ventilation, or power requirements. The building does not reflect any type of flexibility or organizational structure used today in the design of similar buildings. Storage, with required various environmental conditions, for many of the divisions is also not up to current codes or standards. There is a safety component which also needs to be addressed throughout the entire building based on current standards.



*Existing building interior office area*

The 28,000 square foot building currently occupied by NMDA is not large enough to house all of its personnel and equipment. Currently the Agricultural Programs and Resources Division and the Office of Agricultural Biosecurity are situated at other locations. The facility also lacks adequate conference room, office, laboratory, storage, and breakroom space.

NMDA protects New Mexico agriculture and the food supply through inspections, laboratory diagnostics, and advice for policy formulation. NMDA is actively engaged with industry in the development and implementation of federal and state policies and regulations.

NMDA must be supplied with the tools necessary to fulfill this mission. Important consideration should be given to both the renovation and expansion of the current undersized and antiquated facility.



*Existing building interior laboratory space*

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## C. Program Understanding

### NMDA Divisions and Programs

#### **Office of the Director/Secretary**

Provides overall leadership and establishes policy for the operation of the department; provides liaison between agricultural producers and state and federal government; and serves on national committees on behalf of agriculture.

#### **Agricultural Programs and Resources**

Supervises the cooperative predatory wild animal and rodent pest program; supervises farm and range improvement fund activities; coordinates the New Mexico Soil and Water Conservation Program; and coordinates a noxious weed program.

#### **Marketing and Development**

Responsible for state, national, and international marketing and expansion for New Mexico products, livestock, and processed foods; commodity promotions; specialty crop development; produce quality inspection; market news; agricultural statistics; and licensing of producer brokers and packers.

#### **Agricultural Biosecurity**

Responsible for interacting with the agricultural industry, law enforcement agencies, and state and federal agencies to design and direct programs that safeguard and secure the food and agricultural industries.

#### **Agricultural and Environmental Services**

Oversees three program areas: Entomology and Nursery Industries; Feed, Seed, and Fertilizer; and Pesticide Compliance. Feed, Seed, and Fertilizer administers New Mexico commercial feed, seed, and fertilizer laws. Entomology and Nursery Industries handles in-store inspection of nursery plants, plant protection quarantines, apiary inspection, and phytosanitary certification for export of plant materials. Pesticide Compliance licenses pesticide applicators, registers pesticide products, and investigates pesticide-related complaints.

Two NMDA laboratories are under this division: the State Chemist Laboratory and the State Seed Laboratory, which analyze official samples of feed, seed, fertilizer, and pesticide products for the public and other agencies on a fee basis.

#### **Standards and Consumer Services**

Oversees the Consumer Services Bureau, which provides inspection of weighing and measuring devices, packaged commodities, eggs, dairy products, and weighmaster licensing; the Petroleum Services Bureau, which provides inspection of petroleum measuring devices and quality of petroleum products; and supervises the metrology and petroleum standards laboratories.

Metrology Laboratory- Maintains custody of official state standards for mass, volume, and length; provides calibration of weights and measures used in department regulatory activities; and calibration services on a fee basis for industry.

Petroleum Standards Laboratory- Provides analysis of official samples in the enforcement of petroleum product quality standards and specification, and sample analysis on a fee basis for industry and other agencies.

#### **Veterinary Diagnostic Services**

Provides diagnostic analysis of animal specimens on a referral basis for the public and other agencies. This division is located at the Tri-Services Laboratory facility in Albuquerque.

#### **Dairy**

Inspects all dairy farms and processing plants; permits milk tankers and milk hauler samplers; reviews and approves all construction plans for dairy farms and processing plants; and enforces U.S. Food and Drug Administration's Pasteurized Milk Ordinance. This division is located at the Albuquerque District Office.

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## C. Program Understanding

### Laboratory Sections Overview

#### **Feed and Fertilizer Lab**

The Feed and Fertilizer laboratory provides analytical support services to NMDA's Agricultural and Environmental Services (AES) Division, ensuring quality products and a level playing field for manufacturers while promoting responsible environmental stewardship. The lab analyzes regulatory samples collected by inspectors across the state and performs commercial testing for manufacturers and the public on a fee basis.

#### **Pesticide Lab**

The Pesticide laboratory analyzes samples of pesticide formulations and tank mixes to determine if they meet claims. The lab also tests for pesticide residues in environmental samples in support of compliance/misuse investigations. The lab is accredited by US Environmental Protection Agency and adheres to a strict Quality Assurance/Quality Control plan.

#### **Seed Lab**

The State Seed Laboratory determines the quality of seed used for planting. Seed testing yields information about seed lots for two purposes: to determine if seed being offered for sale meets the guarantee stated on the label as per the New Mexico Seed Law and to provide information to the seed industry for labeling purposes. The State Seed Laboratory provides analyses on regulatory samples collected by Feed, Seed, and Fertilizer Bureau inspectors and similar testing on a fee basis for industry, the public, and other state and federal agencies.

#### **Entomology Lab**

This lab is responsible for mitigating the introduction and spread of new plant pests (to ensure a quality horticultural product is sold), and provide phytosanitary certification services. NMDA also provides inspection services for commercial apiaries to determine the presence of diseases and arthropod pests. NMDA maintains a memorandum of understanding with USDA-Animal and Plant Health Inspection Service to facilitate collaboration with inspection and survey responsibilities.

#### **Metrology Lab**

The laboratory maintains mass and volume standards for New Mexico. The use of these standards ensures a fair and equitable marketplace for producers, sellers, and consumers. All mass and volume test standards are certified annually under National Institute of Standards and Technology practices under an accredited program. The laboratory can provide mass calibrations from 1 mg to 2,268 kg by comparison to the Official State Standards. Small volume calibrations below 5 gallons are determined gravimetrically while large volumetric transfers (emptying a standard into a test device) are performed from 5 to 1,500 gallons.

#### **Fuels Lab**

This facility analyzes all petroleum product samples collected by field staff for compliance with quality standards established in the Petroleum Products Standards Act. Samples are collected weekly by all petroleum standards inspectors and shipped to the lab for analysis. This lab is a state-of-the-art facility capable of analyzing in excess of 10,000 samples per year. Currently the laboratory is performing approximately 30,000 analyses on 8,000 samples per year.

#### **Equine Lab**

As part of the Veterinary Diagnostics Division, the proposed Equine Chemistry Testing Laboratory is to be composed of three major components: 1) a full-service, routine drug testing program; 2) a forensic toxicology program; and 3) a pharmacology research and methods development program to include development of new tests and to provide documentation of drug testing effects on the performance of racing horses.



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## C. Program Understanding

### Space Programming

#### Introduction

As part of the programming efforts for NMDA, the design team worked with the departments and facility group to review space requirements. This process included right-sizing of the laboratories and lab support spaces designed to enhance overall flexibility, allowing NMDA to accommodate growth and the changing needs of occupants and their mission over the life of the facility. In addition, office space standards were established for assignment of much needed departmental space including shared resources such as work rooms and seminar space.

#### Programming Considerations

To provide maximum efficiency and cost-effective space, a system of modular planning has been considered based on NMDA requirements, metrics of equipment and casework, and safe practices within the laboratory. This approach to planning provides building blocks for organizing the lab for future flexibility. The module is a defined geometric area that accommodates various functions in the lab, with a minimum 5'-0" aisle width. It can be combined and/or subdivided to meet a wide range of required sizes and is a basis for structural and mechanical design as well as casework construction. A minimum module size for this facility is not less than 10'-8" x 32'-0". Offices have been right-sized to meet future needs with the ability to easily re-configure workstations sized at 64-80 sf and private offices are equitably sized for a variety of departments at 100 sf or greater.

#### Program Understanding

Wet laboratory functions occur within the AES Division, SCS Division, and VDS/Equine Laboratory. Further programmatic identification of lab support spaces with special requirements provides greater understanding of critical adjacencies and work flows between functional areas. Primary Labs (L) are indicated on the Space Program as 'open' general wet bench areas for prep, instruments, and routine work, while unique Lab Support (LS) spaces are identified separately. Lab support may have walls and doors or be open to the primary lab based on functional requirements such as directional air flow, temperature and humidity, vibration sensitivity, security, exhaust odors, heat extraction, air purity, and other environmental control factors.

The administrative branch of NMDA has been programmed in addition to the labs. Other office-related departments include Marketing and Development, Agricultural Programs and Resources, and Information Technology. Distribution of offices and labs has been calculated at a ratio of approximately 1:1. Lab space and related support represents 40% of the total gross square foot area, revealing a large portion of the program devoted to high-tech space requirements. Additional area is typically planned for enclosed lab mechanical/electrical rooms to provide protection from the elements and contribute to decreased life-cycle equipment costs. The net/gross efficiency anticipated for the building program of 60% is based on several factors including a one-story facility design, modular lab planning, and right-sizing of appropriate spaces.

#### Laboratory Design

The proposed state-of-the-art laboratories are characterized by safe, uniformly distributed spaces with access to services, offices, and collaboration areas. Transparency of natural light and views is a goal for interior spaces, balanced with the requirements for light control and privacy. Zoning of laboratory activities as well as mechanical systems increases the safety and efficiency of the lab. The integration of like-functions into uninterrupted, continuous lab and lab support space provides economies of utility distribution and the separation of lab/office mechanical systems, further reducing life-cycle costs and facility maintenance. Casework units and bench construction are planned in a modular fashion with consistent base cabinet, knee space, and work surface dimensions. This design allows for the reconfiguration of various component parts with minimal disruption to the plan.

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## C. Program Understanding

### Systems Description

#### **Office Workstations**

Office areas are designed for flexible arrangement of owner-furnished demountable workstations with integral power/data connections and a variety of options for privacy and separation.

#### **Laboratory Casework**

Laboratory areas are planned with a combination of traditional fixed casework and modular systems including specialized storage units and incidental accessories. Casework will be a combination of metal and wood construction. Upper cabinets have a mix of hinged glazed and solid fronts as well as open shelf units. Shelves are preferred at island conditions for the ability to adjust and accommodate various heights of bench-top equipment.

#### **Lab Tops and Service Fittings**

Countertops can optimize light reflectance while reducing glare with the use of gray epoxy resin. Sink bowls may be drop-in epoxy or stainless steel. Service fittings are epoxy coated. Mixing faucets have vacuum breakers and removable aerator/serrated tip attachments. Fine-needle control is required at all gas fittings for laboratories and lab support areas.

#### **Laboratory Fume Hoods**

Fume hoods will be provided in 6 foot lengths, with vertical rising sashes, motion sensors, visual and audible alarms, labeled sash stops, FRP liners, remotely accessible fluorescent lights, marine edge tops, and services as required. Base cabinets under fume hoods will be provided for a mix of solvent storage, chemical base storage and acid storage as required.

#### **Electrical and Data**

Power and data will be distributed along perimeter walls with a mix of raceway and individual boxes. Center benches will be fed by ceiling service panels overhead to allow for future needs as well as to maintain flexibility for reconfiguration in the center of the room. Data will be accessed through a wireless system, minimizing the number of hard connections required.

#### **Compressed Air System**

A centralized compressed air system shall consist of a packaged air compressor. Distribution to be above the ceiling with shut-offs and stub-outs for future connections.

#### **Vacuum System**

A centralized vacuum system shall consist of a packaged unit. Distribution to be above the ceiling with shut-offs and stub-outs for future connections.

#### **Pure Water System**

The facility will be provided deionized water at a minimum of one sink location per lab, fed from a centrally located source. A unitized Type II DI water system with redundant capacity will consist of a pre-filter, water softener, RO unit, storage tank, and booster pump. Distribution should be a continuous loop supply with stub-outs for future connections and space for owner-furnished polishers.

#### **Safety Devices**

Safety showers and eye washes are provided to meet OSHA standards. Units may be ceiling mounted with recessed wall pulls and integral pull-down eye wash. Dual-headed drench hose eye washes are located at strategic lab sinks near lab exits with stay-open valves for hands-free operation. All units should be supplied with tempered water.

## D. Program Summary

Use	Assign	Room Name	PROPOSED			Comments
			Units	NSF	Total	
<b>Administration/Director's Office</b>						
O	AD	Department Director	1	300	300	
O	AD	Executive Administrative Assistant	3	80	240	non-exempt
O	AD	Deputy Director	1	240	240	
O	AD	Directors	6	120	720	
O	AD	Exempt	3	100	300	
O	AD	Exempt HR (Future Growth)	2	100	200	sound isolation
O	AD	Non-Exempt private space (HR)	1	100	100	
O	AD	Non Exempt	4	65	260	
O	AD	Students	3	45	135	
OS	AD	General Office Storage	1	100	100	
OS	AD	Safe Room/Fire Proof Storage	1	100	100	
OS	AD	File Room secure for HR	1	80	80	
OS	AD	Regulatory Training	1	200	200	1 office and 4 student workstations
OS	AD	Administration Restroom	1	80	80	
<b>Subtotal</b>					<b>3,055</b>	
<b>Information Technology</b>						
O	IT	Director	1	140	140	
O	IT	Development Work Area	1	200	200	development
O	IT	IT Offices Exempt	1	100	100	
O	IT	IT Support Offices Exempt	4	64	256	
O	IT	Student/Help	2	45	90	
O	IT	IT Support Area External	1	80	80	
O	IT	IT Secure Storage/Workarea/Bench	1	200	200	isolated independent cooling w/ office inside
O	IT	Server Room	1	280	280	isolated independent cooling
O	IT	General Office Storage	1	80	80	
<b>Subtotal</b>					<b>1,426</b>	
<b>MD Division: Marketing and Development</b>						
O	MDS	Division Director	1	140	140	
O	MDS	Public Relations	1	100	100	
O	MDS	Specialist	9	80	720	
O	MDS	Inspector	3	64	192	
O	MDS	Administrative Assistant	4	64	256	near general administration
O	MDS	Students	2	45	90	
OS	MDS	Marketing Storage	1	80	80	marketing materials
OS	MDS	Central Storage	1	500	500	high density storage
<b>Subtotal</b>					<b>2,078</b>	
<b>APR Division: Agricultural Programs and Resources</b>						
O	APR	Division Director	1	140	140	
O	APR	Policy Analyst/Professional Staff	9	100	900	private offices
O	APR	Inspectors/Field Staff	5	64	320	one room/seminar room
O	APR	Administrative Assistant	4	64	256	
O	APR	Legal Counsel	1	100	100	
O	APR	Students	3	45	135	one with GIS
OS	APR	Storage/File Room	1	120	120	exist off-site/Maps (Hanging files min)
<b>Subtotal</b>					<b>1,971</b>	

## D. Program Summary

Use	Assign	Room Name	PROPOSED			Comments
			Units	NSF	Total	
<b>AES Division: Agriculture and Environmental Services</b>						
O	AES	Division Director	1	140	140	
O	AES	Assistant Director	3	100	300	
O	AES	State Chemist	1	100	100	
O	AES	Manager	8	80	640	
O	AES	Specialist	14	80	1,120	1 shared workstation with Dairy 6-10 times/yr
O	AES	Inspector	3	64	192	shared workstations for 6
O	AES	Shared Inspector Spaces	3	64	192	11 state-wide, 2 visiting
O	AES	Administrative Assistant	9	64	576	
O	AES	Students	4	45	180	
OS	AES	High Density Storage (FF & P)	1	200	200	labels (12 lateral) and licences (10 Lateral)
OS	AES	General Files	1	120	120	10 laterals
L	AES	Feed/Fertilizer General Lab	1	1,320	1,320	(2) 6' FH, (2) 4' FH, (1) Perchloric FH
L	AES	Feed/Fertilizer Grinding Lab	1	110	110	separate grinders for feed, fertilizer, forage
LS	AES	Feed/Fertilizer Sample Storage	1	110	110	lockable cabinets
LS	AES	Feed/Fertilizer Flammable Storage	1	220	220	
LS	AES	Shared Sample Prep AES	1	220	220	
LS	AES	Feed/Fertilizer Fat Digestions	1	110	110	
LS	AES	Feed/Fertilizer Fume Hood Alcove	2	110	220	
LS	AES	Feed/Fertilizer Oven Alcove	1	110	110	canopy hoods
L	AES	Pesticide/Instrument Lab	1	660	660	990
LS	AES	Pesticide Sample Storage	1	110	110	
L	AES	Entomology General Lab	1	990	990	
LS	AES	Entomology Mud Room	1	110	110	
L	AES	Seed General Lab	1	660	660	
LS	AES	Seed Equipment Room	1	220	220	10 reach-in growth chambers
LS	AES	Seed Sample Storage	1	220	220	herbarium native seed cabinet
<b>Subtotal</b>					<b>9,150</b>	
<b>SCS Division: Standards and Consumer Services</b>						
O	SCS	Division Director	1	140	140	
O	SCS	Assistant Director	2	100	200	
O	SCS	Administrative Assistant	3	64	192	
O	SCS	Biofuels Specialist	2	64	128	
O	SCS	Inspector	1	64	64	
O	SCS	Students	1	64	64	
L	SCS	Metrology General Lab	1	1,320	1,320	
L	SCS	Metrology Precision Lab	1	220	220	small weights, positive pressurization
LS	SCS	Metrology Storage	1	110	110	
LS	SCS	Metrology Shop	1	220	220	
LS	SCS	Metrology Staging Area	1	220	220	
L	SCS	Fuels General Lab	1	990	990	
L	SCS	Fuels Engine Lab	1	330	330	
LS	SCS	Fuels Cool Room	1	110	110	
LS	SCS	Fuels Dry Storage	1	110	110	
LS	SCS	Fuels Manifoldded Drum Storage	1	110	110	
<b>Subtotal</b>					<b>4,528</b>	

## D. Program Summary

Use	Assign	Room Name	PROPOSED			Comments
			Units	NSF	Total	
<b>Equine Chemistry Testing Lab</b>						
						separate entrance
O	VDS	Program Director	1	140	140	parking for director and clients (2-3 spaces)
O	VDS	Chief Chemist	1	100	100	
O	VDS	Associate Chemist	1	80	80	
O	VDS	Senior Lab Technician	1	80	80	
O	VDS	IT / QA / QC	1	80	80	
O	VDS	Reception	1	80	80	
OS	VDS	Breakroom	1	120	120	
OS	VDS	Records Storage	1	330	330	secure 1-2 years
SS	VDS	Restrooms	2	60	120	
L	VDS	Equine Laboratory	1	4,290	4,290	
LS	VDS	Walk-In Refrigerator	1	80	80	
LS	VDS	Walk-In Freezer	1	80	80	
<b>Subtotal</b>					<b>5,580</b>	
<b>Shared Laboratory Support</b>						
LS	SL	Cylinder Manifold Closet	1	110	110	
LS	SL	Hazardous Materials Storage	1	110	110	ventilated - can be exterior
LS	SL	Ice Machine/Common Equipment	1	110	110	
LS	SL	Pure Water Room	1	110	110	
LS	SL	Glassware Washroom	1	110	110	glassware washer/ bench autoclave
<b>Subtotal</b>					<b>550</b>	
<b>Shared Staff Support</b>						
OS	SS	Shared Workroom/Copy Room	2	220	440	
OS	SS	Small Meeting Room	4	220	880	shared, combine/subdivide
OS	MDS	Multipurpose Room	1	220	220	
OS	SS	Classroom/Seminar space	2	440	880	combine/subdivide
OS	SS	Large Conference Room	1	880	880	
OS	SS	Prefunction / Building Lobby	1	440	440	
OS	SS	Breakroom	1	660	660	
OS	SS	General Office Storage	4	110	440	
OS	SS	Demonstration Kitchen	1	110	110	adjacent to lg conf and classroom/seminar
OS	SS	Staff Locker/Changing/Restrooms	2	400	800	
<b>Subtotal</b>					<b>5,750</b>	
<b>Shared Building Support</b>						
O	SB	Buildng Manager	1	100	100	
O	SB	Building Support Staff	2	64	128	
BS	SB	Receiving Dock	2	110	220	
BS	SB	Volumetric Vehicle/Truck Bay	1	440	440	metrology
BS	SB	Cylinder Storage	1	110	110	
BS	SB	Waste Management	1	110	110	can be shared
BS	SB	Central Receiving Storage	1	220	220	
BS	SB	Public Restrooms	2	200	400	
BS	SB	Janitorial	2	110	220	
<b>Subtotal</b>					<b>1,948</b>	

## D. Program Summary

<b>TOTAL NET SQUARE FEET (NSF)</b>		<b>36,036</b>
Departmental gross-up (20%)		7,207
<b>TOTAL DEPARTMENTAL GROSS SQUARE FEET (DGSF)</b>		<b>43,243</b>
Building gross-up (40%)		17,297
		structure, mechanical, circulation
<b>TOTAL GROSS SQUARE FEET (GSF)</b>		<b>60,540</b>
Building Efficiency (NSF/GSF)		60%
<b>Gross Area Summary</b>		
<b>Total Administration and Support</b>		<b>14,330</b>
<b>Total Shared Staff Support</b>		<b>9,660</b>
<b>Total Lab Office</b>		<b>9,539</b>
<b>Total Lab and Lab Support</b>		<b>23,738</b>
<b>Total Building Support</b>		<b>3,273</b>

## E. Planning Drivers

### Site Conditions

#### University Connection

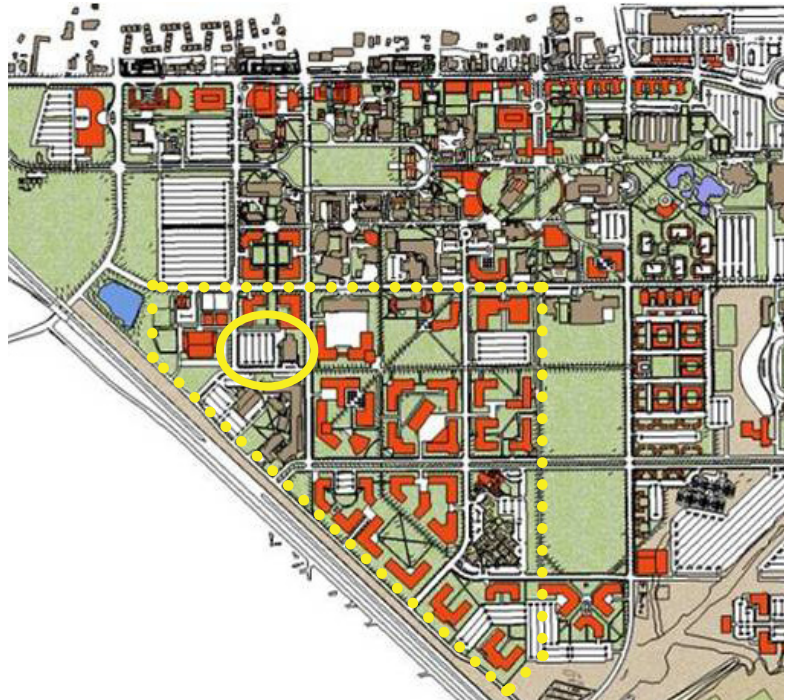
The existing building and site is currently located south of the academic core and directly west of the research center within the campus of NMSU. Across Gregg Street to the south is Doña Ana Community College. To the west are livestock and agricultural areas used by the university.

The building will occupy a significant position within the “Academic/Research District” expansion area for the university as identified in the campus master plan developed in 2006. This area is spotlighted as the main zone for new development and university growth moving into the future. Housing areas currently located to the southeast will be relocated to allow for new academic and research facility development and expansion. Espina Street bordering the east edge of the site will serve as one of the major pedestrian and vehicular thoroughfares connecting the new district with the campus core. A mid-block pedestrian route connecting new and existing academic buildings is also envisioned.

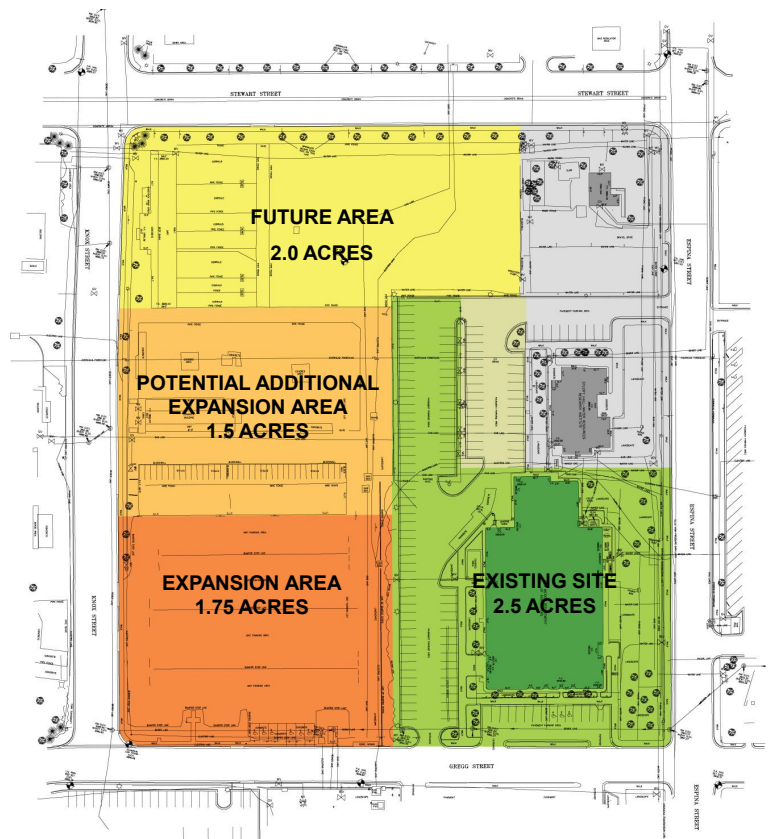
Key drivers identified in the university master plan are: increasing core density, enhancing community connectivity, eliminating superfluous vehicular access and excess parking, developing meaningful open space, and creating a well-defined network of pedestrian paths incorporating shade, landscape, lighting, and site furniture.

#### Immediate Site

The existing building is a one-story structure, about 28,000 square feet in size. It currently occupies an approximately 2.5 acre site that includes parking for visitors, staff, and agency vehicles. The site has driveway access off Gregg Street to the south and currently shares flow-through vehicle access to Espina with Stucky Hall Water Resources Research Institute to the north. The area immediately to the west has been identified as the primary site for expansion, with additional area to the north as potentially available if needed.



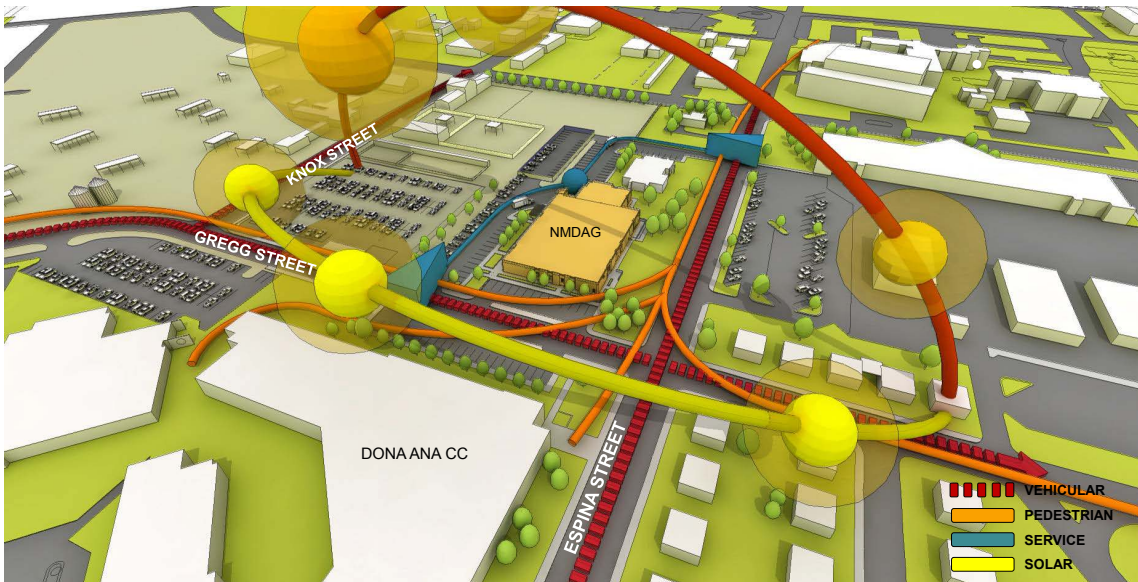
*NMSU Campus Masterplan*



*NMDA Existing Building and Site*

## E. Planning Drivers

### Site Conditions



#### Access and Solar Orientation

A number of site conditions were analyzed to determine the best location for the expansion/addition to the existing building. Espina Street is a main campus artery for both vehicular and pedestrian traffic and is accompanied by a significant landscape setback that extends north to the campus core. Gregg Street acts as a secondary street but offers the most significant frontage for the expansion site. Knox Street to the west can offer alternate access options for agency and service vehicles. The east-west linear orientation of the existing and proposed expansion sites combined together offer a favorable solar orientation for maximizing north and south natural light and minimizing harsh east and west light.



#### Existing Site Utilities

An examination of the existing utility infrastructure shows a predominance of services located along both Espina and Gregg streets. The existence of overhead power lines along the west side of Espina create concern for any scheme which would suggest expanding the existing building to the east, as the lines would possibly need to be relocated or moved underground. The proposed addition site appears relatively clear with only minor electrical crossing between it and the existing building.



## E. Planning Drivers

### Site Program Drivers

As part of the programming process, a number of specific site drivers were identified that have an integral affect on the site planning, orientation and access to the facility, which include:

- Create an easily recognizable and visible entry.
- Create an accessible and comfortable outdoor patio / garden space.
- Provide for 15 visitor parking spaces.
- Provide a secure vehicle area for up to 50 agency vehicles.
- Provide a central shipping / receiving yard with dock space for two semitrailers.
- Provide a metrology dock area for deliveries, customers, and vehicle testing.
- Provide a separate Marketing and Development shipping / receiving area.
- Provide a separate Equine Division entrance and parking for customers.

### Site Concept Diagram

The development of a preferred site concept diagram was a multi-step process that involved analysis of the program, site conditions, best economic practices, phasing, and NMDA staff input. After careful consideration of existing site conditions and the realization that the existing facility would need to remain operational, it was determined that the construction of a separate structure to the west would best minimize disturbance to the existing building. Once completed, a common lobby would be constructed to connect the two buildings. The equine lab is located at the west end in a separate building, forming a courtyard space between it and the existing building. Service access is to the west off Knox Street. Secure vehicle parking is to the north, adjacent to a drive that connects to the existing driveway behind Stucky Hall. Visitor parking will remain to the south of the existing building directly off Gregg Street.

Due to the poor condition of the existing building and the extensive amount of systematic (mechanical, electrical, plumbing) work that would need to be done, it was determined that the best solution would be to locate all the laboratory and lab office spaces in the new building. Once constructed, staff could then occupy the new building while the existing building is remodeled to accommodate office and shared support spaces. When finished, departments currently located in other facilities will move in and the new facility will be fully occupied and functional.

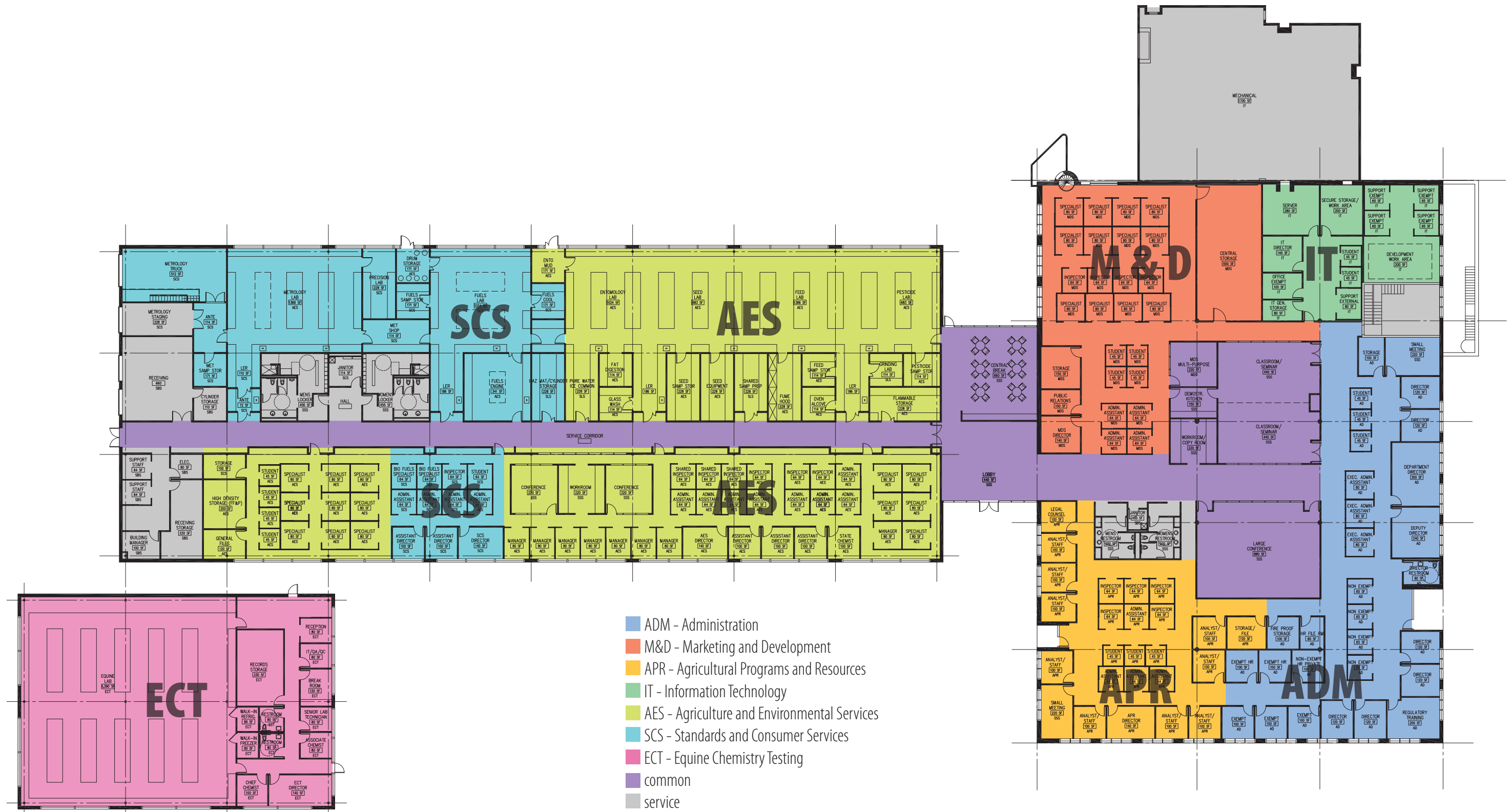


*Preferred Site Concept Diagram*

# G. Conceptual Plans - Site Plan



# G. Conceptual Plans - Departmental Floor Plan



## G. Concept Drivers

### Campus Connection

As an important component in the “Academic/Research District” expansion area identified in the campus master plan, this project will need to respect the style, scale, diversity and quality of the current campus architecture as well as bridge the gap to the neighboring research facilities planned for the future. The nature of this project, being both a remodel of an existing facility and addition of new space, provides a unique opportunity to accomplish both of these tasks.



*Campus Connection*

### Agricultural Mission

As both a regulatory agency charged with the protection of New Mexico’s cornerstone industry and a showcase for goods and services produced by that industry, the NMDA’s agricultural mission and heritage should be celebrated in the architecture of the new facility. Opportunities exist in both the building in the use of agrarian materials and character as well as in the landscape with the design of the courtyard and surrounding areas.



*Agricultural Mission*

### Environmental Sensitivity

Reflecting the key drivers identified in the university master plan and the sustainable mission of the department will be an important component in the design of this facility. Items from the masterplan include enhancing community connectivity, eliminating superfluous vehicular access and excess parking, developing meaningful open space, and creating a well-defined network of pedestrian paths incorporating shade, landscape, lighting and site furniture. On a more project specific level, the building will incorporate the use of natural daylighting, proper solar orientation, solar control in the form of shading devices, and renewable/native materials.



*Environmental Sensitivity*

### Laboratory Aesthetic

The final concept driver stems from the function of the program housed in the facility. Along with administrative office spaces, the building will house state of the art laboratory spaces engaged in research and testing in support of the NMDA’s mission. The building should convey this high-tech program through the use of modern materials and forms.



*Laboratory Aesthetic*

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## H. Conceptual Renderings



View from Southeast



View from South

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## H. Conceptual Renderings



View at Courtyard



View from Northwest

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## H. Conceptual Renderings



Aerial View from Southeast

H. Conceptual Renderings



View at Entry



# I. Estimate of Probable Cost

<b>A1. Construction, Base Building Without Equine Lab:</b>				<b>\$15,512,600</b>
		<b>GSF</b>	<b>\$/SF</b>	
<b>Core / Shell</b>	Building Shell	25,200	\$130	\$3,276,000
	Parking	50	\$2,500	\$125,000
	Building Remodel	26,500	\$35	\$927,500
				<u>\$4,328,500</u>
<b>Labs &amp; Office TI</b>	Admin/Office	12,782	\$110	\$1,406,020
	Building Support	1,948	\$95	\$185,060
	IT	1,426	\$110	\$156,860
	Conferencing/Training	5,750	\$140	\$805,000
	Chemistry/Feed/Pest	3,190	\$230	\$733,700
	Metrology	2,090	\$225	\$470,250
	Shared Lab Support	550	\$200	\$110,000
	Fuels	1,650	\$210	\$346,500
	Entomology/Seed	2,200	\$200	\$440,000
	Gross Building / Infrastructure	20,164	\$90	\$1,814,760
				<u>\$6,468,150</u>
	<b>Subtotal</b>			<b>\$10,796,650</b>
	Estimating Contingency		0.06	\$11,444,449
	General Conditions		0.10	\$12,588,894
	Contractor Bond & Fee		0.03	\$12,966,561
	<b>Building Cost</b>			<b>\$12,966,561</b>
	Building	51,750	GSF	\$12,966,561
	Sitework	0.85	Lump	\$306,250
	<b>Subtotal</b>			<u>\$13,272,800</u>
	Escalation (To Start of Construction)	6.00%		\$796,368
	<b>Subtotal</b>			<u>\$14,069,168</u>
	Bid Contingency	4.00%		\$530,900
	<b>Subtotal</b>			<u>\$14,600,100</u>
	Taxes	6.25%		\$912,500
	<b>Total</b>			<u>\$15,512,600</u>

<b>A2. Construction, Equine Lab:</b>				<b>\$3,810,300</b>
		<b>GSF</b>	<b>\$/SF</b>	
<b>Equine Lab</b>	Shell	9200	\$130	\$1,196,000
	Tenant Improvement	9200	\$160	\$1,473,600
				<u>\$2,669,600</u>
	<b>Subtotal</b>			<b>\$2,669,600</b>
	Estimating Contingency		0.06	\$2,829,776
	General Conditions		0.10	\$3,112,754
	Contractor Bond & Fee		0.03	\$3,206,136
	<b>Building Cost</b>			<b>\$3,206,136</b>
	Building	9,200	GSF	\$3,206,136
	Sitework	0.15	Lump	\$54,044
	<b>Subtotal</b>			<u>\$3,260,200</u>
	Escalation (To Start of Construction)	6.00%		\$195,612
	<b>Subtotal</b>			<u>\$3,455,812</u>
	Bid Contingency	4.00%		\$130,400
	<b>Subtotal</b>			<u>\$3,586,200</u>
	Taxes	6.25%		\$224,100
	<b>Total</b>			<u>\$3,810,300</u>

# I. Estimate of Probable Cost

<b>A. Construction, Total:</b>	<b>\$19,322,900</b>
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<b>B. Furnishings, Fixtures, and Equipment</b>	<b>\$2,400,028</b>
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Furniture Allowance	6.00%	\$1,028,584
Equipment Allowance	8.00%	\$1,371,445

<b>C. Fees, Costs, Inspections, and Testing:</b>	<b>\$2,597,792</b>
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A/E Fees and Expenses	9.00%	\$1,636,800
Fees and Permits	1.00%	\$181,863
As-Builts Development	0.15%	\$27,279
LEED Commissioning	\$1/sf	\$60,950
Tests, Soil Borings and Surveys	0.50%	\$90,900
Additional Fees	1.50%	\$257,100
Project Administration Fee	2.00%	\$342,900

<b>D. Site Acquisition:</b>	<b>\$435,357</b>
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NMSU Utilities Impact Fees (350 SF per ton @ \$2,500 per ton)	\$435,357
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<b>E. Miscellaneous Project Costs:</b>	<b>\$2,475,906</b>
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Construction Contingency	2.00%	\$386,500
Security (included above)	0.00%	\$0
Telecommunications (included above)	0.00%	\$0
Art Commission	1.00%	\$193,200
Owners Contingency	10.00%	\$1,714,306
Move-in / Relocation Costs	1.00%	\$181,900

<b>PROJECT BUDGET ESTIMATE</b>	<b>\$27,231,984</b>
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<b>Equine Lab Breakout</b>	<b>\$5,369,899</b>
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<b>Budget Estimate without Equine Lab</b>	<b>\$21,862,084</b>
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**NOTES :**

- Contractor's performance bond is based on **100%** of total construction cost.
- **Escalation** which takes into consideration the expected cost growth between the date of this estimate and the bid date of construction, **which currently is escalating at 0.25% per month**, has been included for the purpose of calculating construction cost. Escalation is currently assumed for two years.
- SSWA/SmithGroup has no control over the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices, competitive bidding, and market conditions. A 4% bid contingency is included to reflect this uncertainty.
- This opinion of the probable cost of construction is made on the basis of experience, qualifications, and best judgement of our qualified staff familiar with the construction industry. SSWA/SmithGroup, however, cannot and will not guarantee that actual construction costs will not vary from this estimate.
- General Conditions have been included at **10%** to cover Contractors' costs.

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## J. Summary and Conclusions

This Concept Design Report for the proposed addition and renovation illustrates and describes design, program requirements, planning concepts, sustainability issues, project costs, and materials for a flexible and high-quality facility for the New Mexico Department of Agriculture located on the New Mexico State University Campus in Las Cruces, New Mexico. The design for this proposed project is the outcome of an active and creative dialog with the Secretary of Agriculture, executive committee, University Architect's office, division directors, NMDA staff, and represents a consensus of participants in the design process.



The proposed NMDA Addition and Renovation has several attributes that include:

- Addition of a permanent structure with adequate space to support the mission of NMDA.
- Creation of an income and employment generator in the Equine Chemistry Testing Lab.
- Reinforces the current synergy of activity opportunities through connections with NMSU and the agricultural community.
- Supports and carries forward the goals of the campus master plan
- Multi-functional, flexible capabilities for an efficient operation of division activities.
- State-of-the-art regulatory, testing, and research laboratory facilities.
- Energy efficient and innovative sustainable, healthy materials design, natural lighting, and renewable/native materials.
- Efficient shared building, staff, and laboratory support spaces.
- Efficient circulation within and between divisions.
- Low maintenance, durable “lifetime” materials used throughout to provide a high value over time.
- Cost-effective, quality design which utilizes simple, elegant assembly of building shapes and components.
- Enduring, classic design which expresses the spirit of the university and fits the scale and environment of the site.
- Adequate site circulation with public and restricted secure parking requirements.
- Controlled building entrances for pedestrians and specimen/sample deliveries.
- Environmentally safe and secure workplace.
- Upgraded to meet all current codes, regulations, and accessibility standards.
- Phasing opportunities for both the addition and renovation.

The 28,000 square foot building currently occupied by NMDA is not large enough to house all of its personnel and equipment. Currently the Agricultural Programs and Resources Division and the Office of Agricultural Biosecurity are situated at other locations. The facility also lacks adequate conference room, office, laboratory, storage, and breakroom space.

NMDA protects New Mexico agriculture and the food supply through inspections, laboratory diagnostics, and advice for policy formulation. NMDA is actively engaged with industry in the development and implementation of federal and state policies and regulations.

NMDA must be supplied with the tools necessary to fulfill this mission. Important consideration should be given to the renovation/expansion of the current undersized and antiquated facility.

On behalf of the design team of Studio Southwest Architects and SmithGroup, Inc., we thank the Secretary of Agriculture, the executive committee, University Architect's office, division directors, and staff for their participation. This concept design report is the combined and successful result of staff, design team, and consultants who all worked cooperatively and creatively to provide the results shown in this document. We look forward to developing the project further.



**SMITHGROUP**  
architecture engineering interiors planning