Chapter Five
The Master Plan for the RML Site

5 The Master Plan for the RML Site

As of 2005, 240 persons worked at The Rocky Mountain Laboratories (RML) and total building space amounted to approximately 204,000 gross square feet in 37 buildings. Building 28 (IRF - the Integrated Research Facility) was under construction and, when completed and fully occupied, will add 105,000 gross square feet and an estimated 96 personnel to the campus.

Significant population and economic growth have occurred over the past decade in Ravalli County, Montana and the City of Hamilton. There are also several construction projects recently completed, underway or soon-to-be-completed on the RML campus that will add new staff or activities. Among these are the Integrated Research Facility (IRF, also designated Building 28), a Replacement Building (Building 31) for activities that are to be relocated from the campus perimeter, parking and road improvements and site security improvements including a Visitor Center (Building 30) and a Shipping and Receiving Building (Building 29).

A number of structures on the campus are aging and/or obsolescent and in need of repair or replacement. With increased population growth in Hamilton and Ravalli County and new requirements placed on RML for state-of-the-art research facilities and other activities, concerns within the communities near the campus have escalated. The RML Master Plan is designed to address the potential long-term land use planning and facility issues of concern to the local community and RML while improving the appearance and functionality of the campus.

5.1 Planning Process and Program Summary

5.1.1 Master Plan Process

Development of the RML Master Plan has followed a logical and comprehensive process. All direction and decisions have been coordinated with National Institutes of Health (NIH), National Institute of Allergy and Infectious Disease (NIAID), and RML staff, both individually and collectively, through the Master Plan Steering Committee.

The Master Plan Steering Committee includes the:

- Director of the Division of Intramural Research, NIAID
- Associate Director, Rocky Mountain Laboratories, NIAID
- Business and Program Manager, RML, NIAID
- Director, Office of Research Facilities
- Director, Division of Facilities Planning, ORF
- Director, Division of Environmental Protection, ORF
- Associate Director for Security and Emergency Response, ORS
- Science Resource Manager, ORS

NIH has informed the local community, neighbors of the lab, and public agencies about the progress of the plan as it proceeded as well.

The IRF, when it is fully operational, will add 96 staff to the current population of 240 increasing campus population to 336. This Master Plan responds to current operational and physical conditions on campus and would accommodate a potential growth to 427 employees within the next 20 years. As research initiatives evolve, personnel and facility requirements may change further. For that reason the Master Plan will be updated periodically. It recognizes, however, that actual program realization will depend on NIH and Department of Health and Human Services (HHS) priorities, congressional and presidential policy decisions, and federal budgetary realities and availability of resources.

Furthermore, while the Master Plan is a reasonable guideline for future development it does not represent the pre-approval of any individual facilities project nor the particular needs of specific programs to be accommodated on the campus since the financing of such projects and programs must be addressed within the annual HHS budget processes and the HHS Capital Investment Review Board mechanisms.

The following activities were part of the master planning process.

Establishing Planning Goals, Objectives, and Premises
This process established the basic objectives which need to be achieved by the Master Plan in support of the research mission of the RML, and defined the fundamental attitudes which supported and shaped the direction of subsequent studies.

Data Gathering and Analysis
This phase involved documenting physical site conditions and interviewing RML personnel to update the programmatic needs for the campus. During the analysis phase the interview data was compiled, augmented, and later adjusted to project campus population and space needs, in increments, over the next 20 years. The physical site data were analyzed to confirm general patterns of land use, building disposition, landscaping and other important features within the campus, and to understand the RML site in relationship to its surrounding context.

Development of Program and Planning Principles
During this phase, the campus space needs were further defined to determine appropriate allocations of space to various campus uses and identify other needs or activities which should be addressed by the Master Plan. Concurrently, general Planning Principles, derived from the analysis of existing conditions and Planning Premises were put forward and reviewed.

Alternative Concept Studies
Three concept studies showing alternative campus development strategies and potential building sizes and locations were prepared and reviewed for appropriateness. The Master Plan Steering Committee adjusted programmatic and planning objectives both to reflect the consensus reached among RML and NIAID leadership regarding estimated program and personnel growth and in anticipation of community concerns regarding such issues as traffic through the residential neighborhood and construction density on the site relative to the surrounding community. Further, direction was established with respect to the location and relationships of functional components.

Preliminary Master Plan/Draft Master Plan/Final Master Plan
The resulting Preferred Concept was further refined through development of the Preliminary Master Plan as additional program data for the Office of Research Facilities (ORF) management, maintenance, storage, waste management and fuel storage became available.

5.1.2 Summary of Master Plan Goals

In order to accomplish the RML mission in an efficient and effective manner, it is imperative that RML have an agreed upon long range facilities plan that addresses facility and campus requirements, prudent land use, and orderly future development.

The objective of the Master Plan is to provide a guide for the reasoned and orderly potential development of the campus that values and builds on existing resources, corrects existing deficiencies and meets changing needs through both new construction and renovation and sets forth implementation priorities and a logical sequencing of planned potential development.

The plan is based on phased personnel and space estimates. The document is not intended to be a specific design and construction program, but rather a framework within which the design

and construction of required facilities could occur over the next 20 years as the potential programmatic plans upon which this facilities plan is based arise and funding becomes available.

The NIH, with the NIAID and RML, seeks to accomplish its mission by:

- Fostering fundamental discoveries and innovative research, and their applications, in order to advance the Nation's capacity to protect and improve health;
- Developing, maintaining, and renewing the human and physical resources that are vital to ensure the Nation's capability to prevent disease, improve health, and enhance quality of life;
- Expanding the knowledge base in biomedical and associated sciences in order to enhance America's economic well-being and ensure a continued high return on the public investment in research; and
- Exemplifying and promoting the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science.

The Master Plan supports this mission with the following planning goals:

Goal 1: Provide a flexible framework for a “living campus”, one that can adapt to the potential needs of current and future RML and National Institute of Allergy and Infectious Diseases programs over time

Goal 2: Provide an attractive campus whose setting and composition promote collegial interaction and opportunities for informal and formal collaboration and exchange of ideas, expertise and data

Goal 3: Provide a secure, supportive, and convenient work environment for the people involved in RML activities, including scientists and professional administrative staff, visitors and other non-RML users, with amenities that enhance the quality of life for staff

Goal 4: Enhance the appearance of the RML campus so that it complements the surrounding residential community

Goal 5: Protect, conserve and enhance RML’s natural, historic, and scenic resources

Goal 6: Foster improved communication about, and better understanding of, NIH goals and policies through the planning process.

5.1.3 Summary of Planning and Programming Premises

General Growth

Under the proposed Master Plan, NIH would continue to develop RML to accommodate NIH’s and NIAID’s research needs and related programmatic adjacencies consistent with the commitment to maintain the “campus” character of the site. The Master Plan advances this objective by programming and locating potential future RML growth so that local services and utilities would be available to support growth, and establishing development guidelines for possible future changes to the site that ensure that, as the campus grows, new development would be responsive to the context of adjacent neighborhoods or developments.

The following sections of the plan contain personnel estimates provided by RML and NIAID leadership and researchers, in addition to RML staff, during interviews conducted by the planning team in 2006, and space estimates prepared by the planning team based on those personnel estimates as part of the programming phase of the Master Plan (see Tables 5.1.3.A and 5.1.3.B).

It is important to note, however, that the distributions of personnel and space by phase in the two tables are provided simply to illustrate the results of the programmatic discussions that occurred in 2006 and are not meant to suggest that campus growth in terms of personnel or space would occur as proposed in the interviews. Tables 5.4.1 and 5.4.2 in Section 5.4, on the other hand, outline the manner in which the Master Plan translates the overall personnel and space requirements shown in Tables 5.1.3.A and 5.1.3.B into an implementation plan for the 20-year Master Plan. Tables 5.4.1 and 5.4.2 take into account factors such as desired construction phasing, the timing of development projects, and other considerations that would affect the delivery of Master Plan proposals.

Personnel Growth Estimates

If the campus develops as planned, RML population could potentially grow by 27 percent over the current population of 336 (including 96 estimated personnel in the new IRF) to a total campus population of 427 by the end of the planning period. The primary growth at the campus would be in Intramural Research personnel and the staff to support them.

Space Programs

The Master Plan uses personnel growth estimates to determine potential net and gross area requirements. These are calculated as set forth in Section 2.11.2 and are shown in Table 5.1.3.A below.

TABLE 5.1.3.A
ESTIMATED POTENTIAL PERSONNEL GROWTH AND NET AND GROSS AREA REQUIREMENTS (NOTE: PHASES BEGIN AFTER THE DATE THE MASTER PLAN IS APPROVED)

Totals	Existing (2005)	Phase 1	Phase 2	Phase 3	Phase 4
Net Useable Area	187,349	243,068	252,704	255,294	259,474
Gross Area	309,223	408,368	421,674	426,336	431,690
Existing	309,223	266,285	408,368	421,674	426,336
Demolition	0	42,938	0	0	0
New Construction	0	142,083	13,306	4,662	5,354
Personnel	336	400	414	422	427
Researchers	202	221	231	238	241

Programmed Built Area

The largest programmed growth component would occur within the initial phase of the plan depending on program priorities and availability of resources. Total building area could increase from 309,223 existing gross square feet (gsf) to 408,368 gsf, largely to address potential new research needs and to correct existing deficiencies. During this period 42,938 gsf of existing space could be demolished and 142,083 gsf of new space could be constructed. Over the ensuing years, based on limited anticipated personnel growth, further increases in required building area would be in small increments and total only 23,322 gsf. Table 5.1.3.B sets forth net and gross area plans by major functional unit.

TABLE 5.1.3.B
POTENTIAL NET AND GROSS AREA REQUIREMENTS BY BASIC FUNCTIONAL UNIT

Basic Functional Unit	Existing (2005)		Phase 1		Phase 2		Phase 3		Phase 4	
	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross
Laboratory, Director's Reserve and Shared Laboratory Support	71,188	113,398	83,910	151,038	88,040	158,472	90,630	163,134	91,710	165,078
Integrated Research Facility	37,036	103,190	37,036	103,190	37,036	103,190	37,036	103,190	37,036	103,190
Veterinary Branch	30,818	37,157	43,650	63,158	43,650	63,158	43,650	63,158	43,650	63,158
Administrative Services	10,328	13,042	12,550	17,570	12,550	17,570	12,550	17,570	12,550	17,570
Maintenance Shops and Storage	11,475	12,798	21,560	23,716	21,560	23,716	21,560	23,716	21,560	23,716
Central Stockroom	2,879	3,129	10,700	11,770	10,700	11,770	10,700	11,770	10,700	11,770
Equipment Storage	3,476	3,659	5,600	6,160	6,000	6,600	6,000	6,600	6,000	6,600
Interpretive Center	0	0	0	0	0	0	0	0	3,100	3,410
Visitor Center	2,657	3,562	2,657	3,562	2,657	3,562	2,657	3,562	2,657	3,562
Shipping and Receiving	7,156	7,525	7,156	7,525	7,156	7,525	7,156	7,525	7,156	7,525
Waste Management	547	1,092	6,120	6,732	9,020	9,922	9,020	9,922	9,020	9,922
Incinerator	2,118	2,356	2,118	2,356	2,118	2,356	2,118	2,356	2,118	2,356
Central Plant	7,671	8,315	7,671	8,315	9,877	10,557	9,877	10,557	9,877	10,557
Amenities	0	0	2,340	3,276	2,340	3,276	2,340	3,276	2,340	3,276
Totals	187,349	309,223	243,068	408,368	252,704	421,674	255,294	426,336	259,474	431,690

In order to accommodate these expectations, the RML has planned for a combination of renovations of existing structures and construction of new facilities. The listed increases in area, however, represent only new construction to expand capacity, to replace obsolete facilities or permit a decompression or reassignment of space through renovation of existing buildings. They do not identify the areas of renovation that would be needed in buildings, such as the Quad and Building 13, to correct existing deficiencies. For example, although 20,522 net assignable square feet of research laboratory space (from 71,188 to 91,710 square feet) could be added to the campus over the next 20 years, significant renovation would be carried out in existing laboratory areas as well.

Planning Premises

Building and Land Use

- Similar building uses should be grouped together geographically
- Employee amenities and services should be increased and appropriately distributed on campus

Open Space

- A perceivable and hierarchical system of open spaces should be developed
- The buffer zone at the site perimeter should be enhanced and respected where possible

- Landscaping elements should be improved and increased

Architectural Guidelines

- Policies and criteria should be developed and used as guidelines for future development.
- Development should respect historic patterns, and should convey a sense of order, quality, and unity throughout the campus.
- Buildings should be designed with maximum flexibility to facilitate change as state-of-the-art needs dictate

Transportation/Circulation

- A well-defined road system should be established to increase efficiency, orient visitors, and protect open space.
- Parking should be located outside the loop road separated from the pedestrian core of the campus.
- Parking should be on-grade rather than in parking structures consistent with the scale and character of the adjacent residential community.
- Existing dispersed parking should be preserved, where possible and appropriate, in locations convenient to workplaces.
- The character of the campus as one that encourages pedestrian use should be promoted.
- Accessibility for persons with disabilities must be ensured.

Infrastructure

- Major utility infrastructure and service uses should be geographically concentrated.
- The development of the Master Utilities Plan should be coordinated with the Master Plan.

Laboratory Research Programs

- Planning should group research laboratories around central animal facilities.
- Functionally related laboratories should be grouped together.
- The historic Quad should be retained for research laboratory use but renovated to permit decompression of current occupancies and reallocations to correct space deficiencies.

Animal Programs

- Planning for animal programs should provide for current needs while anticipating the eventual need to replace Building 13.

Management

- A “good neighbor” relationship should be maintained with the surrounding community.
- RML should continue to provide means for citizen involvement in activities on campus.

Amenities and Site Program

- The Master Plan should provide for amenities in accordance with the approved *Guidelines for Amenities and Services Within NIH Facilities, December 2004,* and the results of the RML staff questionnaire described in Section 4-5.

- Amenities not specifically programmed, but that may be absorbed within the gross area allocated to space programs of major buildings should be distributed according to the Amenities Guidelines.
- Outdoor spaces planned for recreation, including bicycle and hiking paths, should be provided.

5.1.4 Planning Principles

Planning principles were established as the first step toward conceptual designs, and represent broad physical design objectives which guided the concept plans prepared for the site.

The major Planning Principles have been grouped into four categories, which are described below.

Campus Structure and Landscaping (Figure 5.1.4-a)

- Respect the existing campus orthogonal grid in developing a new campus structure.
- Retain the historic core as a major campus organizational feature.
- Create a better-defined sense of hierarchy among campus buildings and open spaces.
- Create or enhance defined open spaces within the interior of the campus.
- Locate and utilize interior campus open spaces to link buildings and create a pedestrian friendly environment.
- Preserve the perimeter of the campus as open space with an informal landscaped screen buffer.
- Preserve and enhance the relationship of the campus to its broader environment.

Development Height Zones (Figure 5.1.4-b)

- Establish maximum building height (52') at the campus core surrounded by buildings of medium height (40') and with lowest construction density (0'-20', except for the two, existing, $2^{1/2}$ story houses in the historic core) at the campus perimeter.

Access and Parking (Figure 5.1.4-c)

- Maintain and enhance the current 4^{th} Street main entrance and the 5^{th} and Baker Streets service entrance.
- Reinforce campus organization and facilitate vehicular access to all areas of the campus through the creation of a loop road.
- Provide all parking in surface lots.
- Locate new parking along the north perimeter of the campus.
- Retain and improve parking to the east and south of the Quad both to achieve required surface parking spaces and for staff convenience.
- Create a walking path within the occupied portion of the site, and extend a hiking trail through the west side of the site.
- Provide additional pedestrian/bicycle access gates in the perimeter fence to encourage employees to use alternative modes of travel and to allow access to the natural area on the western portion of the site.

Functional Relationships (Figure 5.1.4-d)

- Relate existing and planned building groupings to an overall campus structure.
- Reinforce the laboratory and animal buildings as the functional heart of the campus.
- Cluster administrative and support functions central to areas supported.

5.1.5 Alternative Concept Studies

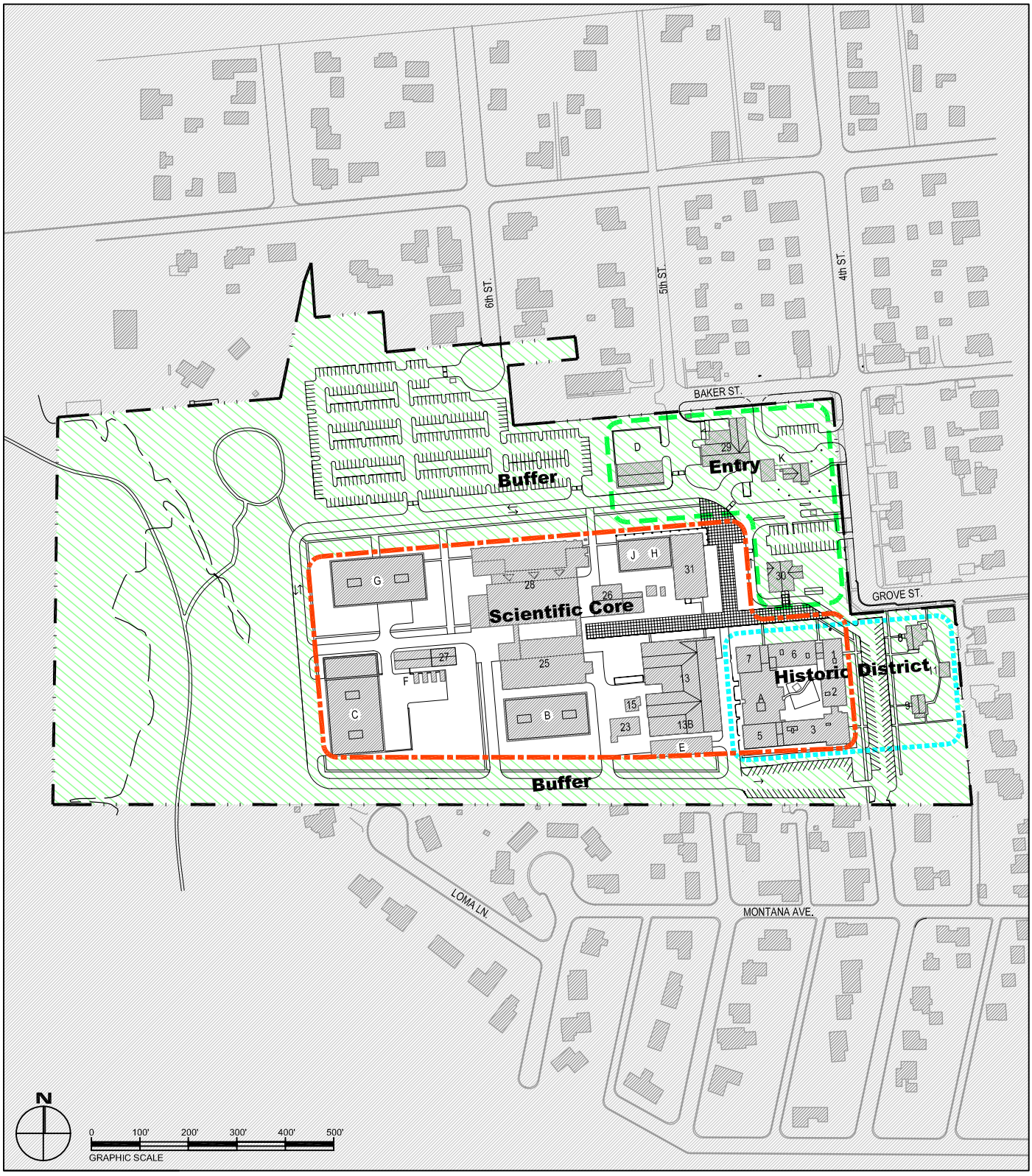
Initial concept plans were prepared based on interview data. The objective of this planning was to evaluate building size and lot coverage as well as to study alternative building placements, site circulation options and locations for a major conference center initially suggested for consideration in the Master Plan. The Master Plan Steering Committee reviewed the concept plans and their program basis. They found the growth in program staffing estimated by the RML laboratory personnel to be unrealistic for RML and the resulting concept plans to be excessive in terms of building size and scale of development given the campus' research requirements and its proximity to its residential neighbors. Instead, the Steering Committee directed the Planning Team to assume a Low Growth personnel expansion for the 20-year plan. Under this option, after a period of construction during the initial phase for space and staffing increases to correct existing deficiencies and provide needed shared laboratory, animal, administrative and ancillary support services for the IRF, the employment on campus would grow by approximately 1% per year, and site development would proceed at a density compatible with the scale of the adjacent residential community.

A continuing planning dialogue based on these objectives, as well as alternative building deployment, functional relationships and coordination with existing site utilities, resulted in a concept plan for the 20-year timeframe that would accomplish project objectives and be consistent with established Planning Premises and Principles. This concept was approved for Master Plan development.

5.2 Master Development Plan

5.2.1 Introduction to the Master Plan

The Master Plan, shown in Figure 5.2, accommodates a potential campus employee population growth, over the 20-year timeframe of the plan, from 336 currently to approximately 427. To support the growth in employees, and required utility upgrades, the campus gross built area could potentially increase during the Master Plan period from 309,223 gross square feet to 431,690 gross square feet which includes the replacement of approximately 43,000 square feet of obsolete buildings to be demolished. Much of the building area growth would be attributable to construction of a central administrative and storage building to replace obsolete buildings and those located within the site standoff area; expanded animal facilities south of Building 25; construction of a new research laboratory building west of Building 28 (the Integrated Research Facility); and consolidation of maintenance activities in the southwest corner of the buildable site area. Solid waste management facilities would be constructed just inside the service entrance opposite Building 29, the Shipping and Receiving Building, and at the incinerator building. Central plant expansion and improvements would include demolition of Building 24 with consolidated and expanded generator capacity at Building 27and boiler and chilled water plant expansion in the new research laboratory building. Existing parking at the south perimeter and within the historic core would be retained and improved, and new surface parking would be consolidated along the north perimeter within an expanded site created through private property acquisitions.



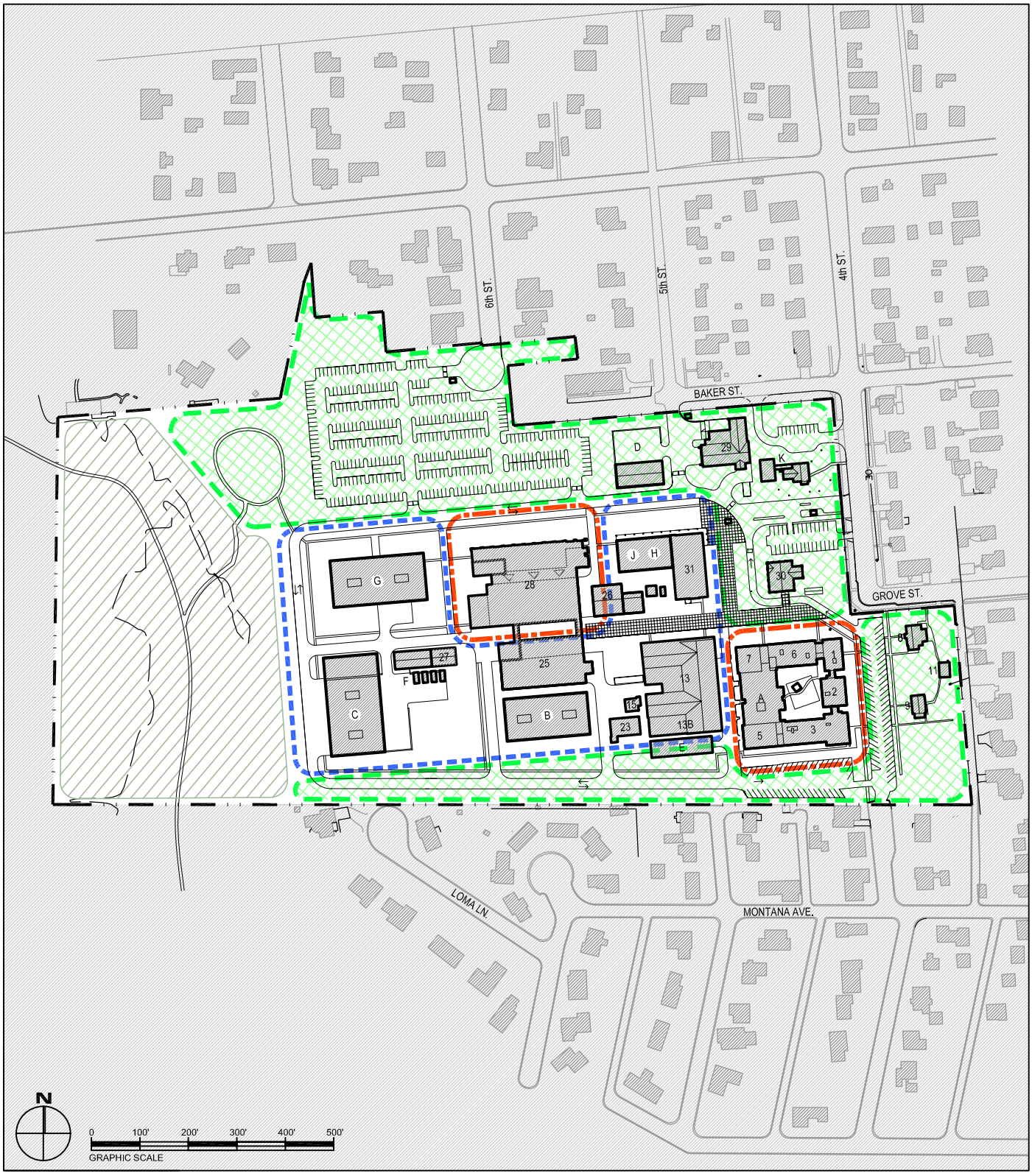
NIH-RML Master Plan
Hamilton, Montana

- Scientific Core
- Historic District
- Entry
- Buffer

Figure 5.1.4-a

Planning Principle

Campus Structure



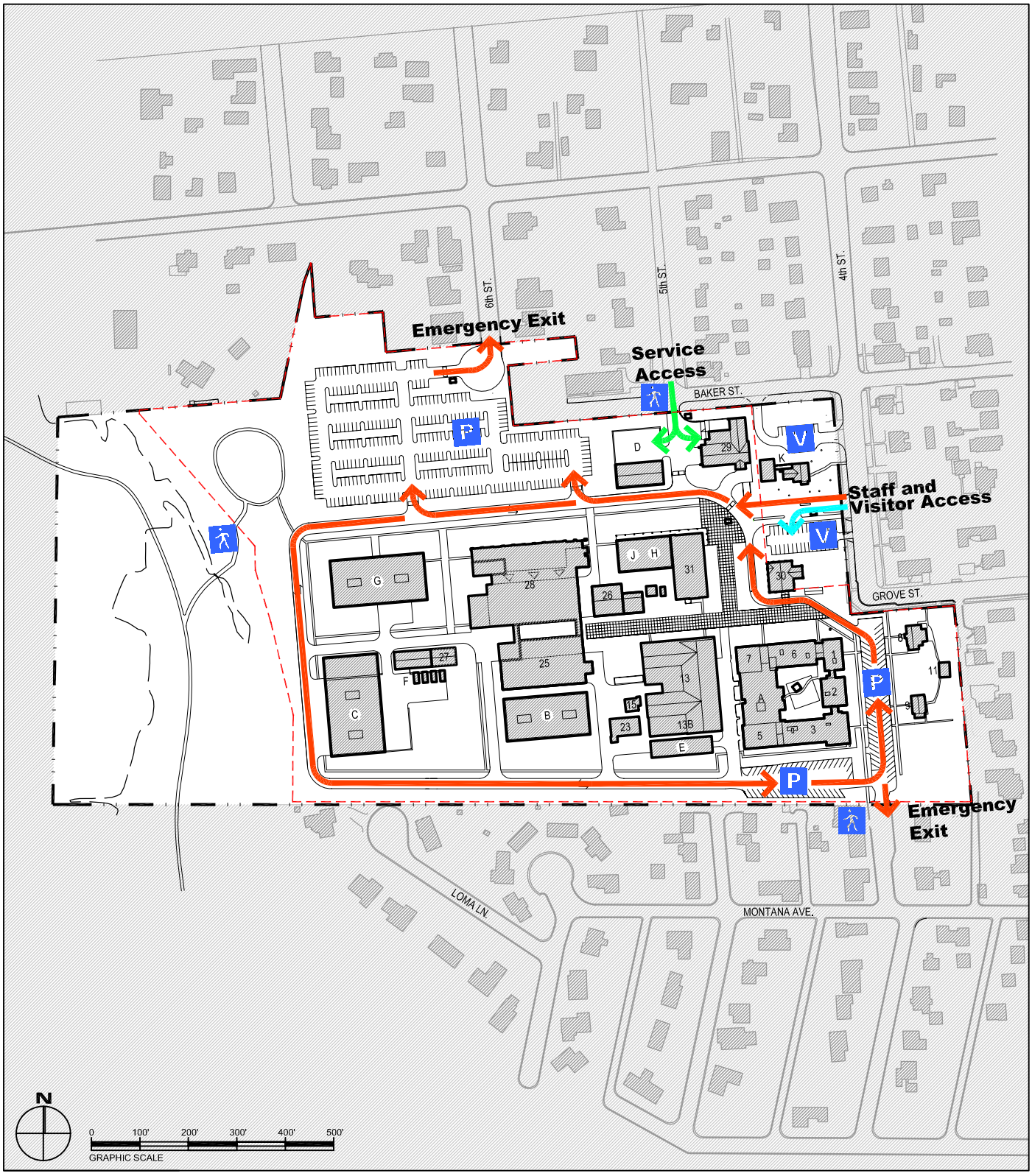
NIH-RML Master Plan
Hamilton, Montana

- Highest
- Medium
- Lowest
- Screen Buffer
- Open Space Buffer- No Development

Figure 5.1.4-b

Planning Principle

Development Height Zones & Buffers



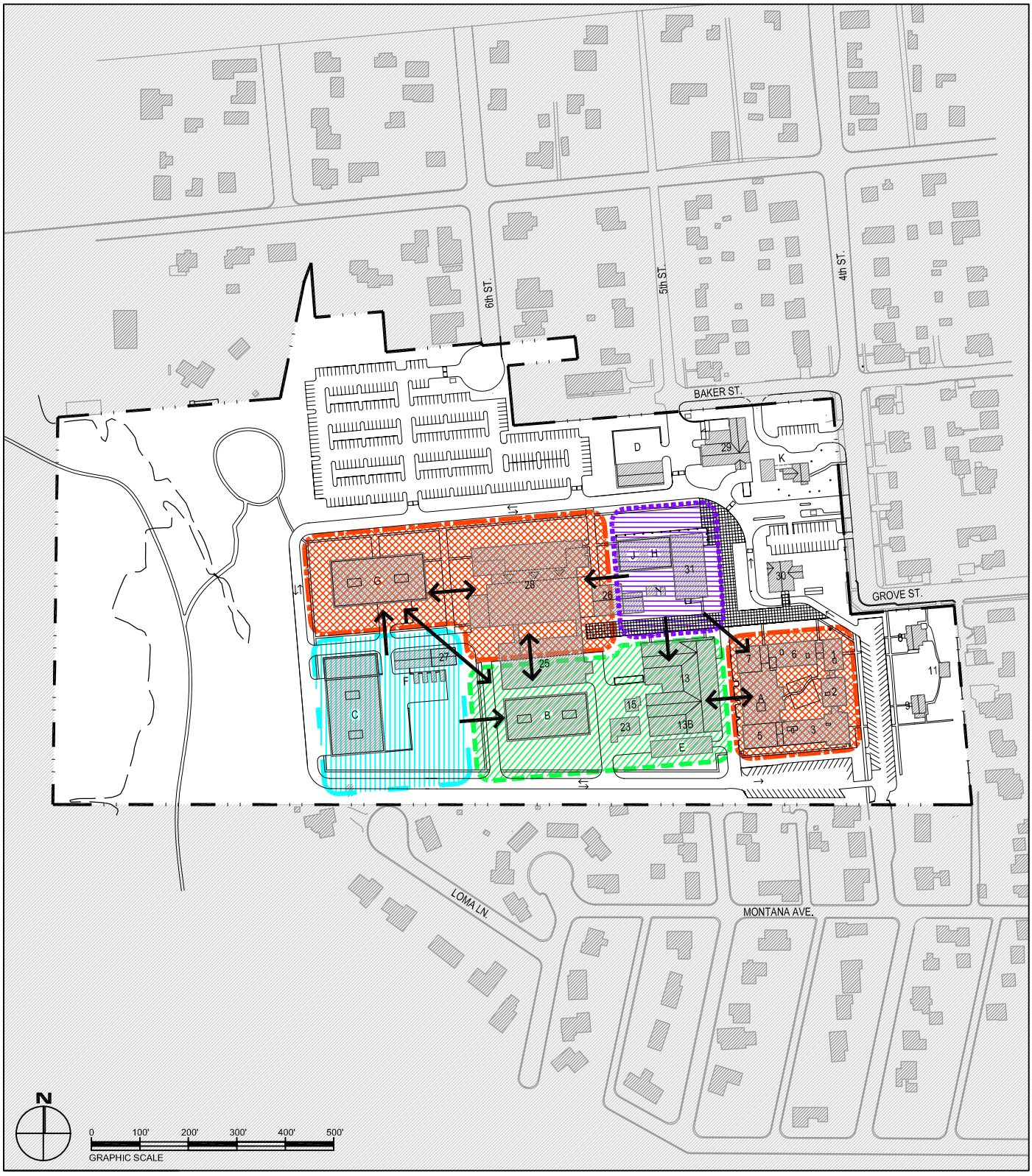
NIH-RML Master Plan
Hamilton, Montana

- P Staff parking
- V Visitor parking
- Pedestrian/Bicycle gate
- Perimeter fence
- Staff traffic
- Visitor traffic
- Service traffic

Figure 5.1.4-c

Planning Principle

Access & Parking



NIH-RML Master Plan

Hamilton, Montana

- Laboratory
- Animal
- Support
- Admnistration

Figure 5.1.4-d

Planning Principle

Functional Relationships

NIH/ORF/DFP

LSY Architects

Oudens + Knoop Architects, PC

In addition, planned acquisition of property at the northeast corner of the site would permit new construction, along with renovation of an existing log home, to provide a public information facility, to be called the Interpretive Center, outside of the protected site perimeter and with its own access and parking.

The RML Master Plan is intended to be a strategic tool for the efficient allocation of campus resources, the orderly accommodation of future growth and the creation of an environment which is both functionally and aesthetically conducive to accomplishing the RML mission. The facilities plan accommodates the program plans set forth in Section 5.1.3, and the Goals and Objectives elaborated on in Section 5.1.2. The plan provides a rational framework to accommodate projected growth incrementally, and in a manner which consistently reinforces a desired character for the campus.

The Master Plan would establish the Quad and the IRF as the armature with buildings and open spaces built around them and all parts of the campus linked in an orthogonal grid. The core of the campus has a denser character; while buildings near the perimeter are set at more generous spacing within the landscape.

The pedestrian core of the campus would be enclosed within a loop road with campus entries for visitors and staff on the east side at the current 4th Street entrance and service traffic at the northeast corner near 5th and Baker Streets.

A standoff and buffer setback area, 100’ wide, would extend around the site perimeter interrupted only along the southeast boundary by existing surface parking; at the east side by existing Buildings 1, 6, 8, 9 and 11 in the Historic Core; and to the north by the Shipping and Receiving Building and new surface parking for staff.

A combination of renovation of existing structures and construction of new facilities would be used to accommodate functional needs. The area increases listed in Section 5.1.3 represent new construction only to expand capacity, to replace obsolete facilities or permit a decompression or reassignment of space through renovation of existing buildings. They do not identify the areas of renovation that would be carried out in existing buildings. The following Table 5.2.1.A lists existing buildings and notes the disposition of each within the 20-year Master Plan, including renovation to correct existing deficiencies.

Table 5.2.1. Existing Buildings and Potential Disposition in Master Plan

Building	Gross Area	Primary Use	Potential Disposition
1	8,246	Research	Reallocate and renovate area in Buildings 1-7 as required to correct deficiencies in equipment rooms, post-doctoral fellows offices and storage space
2	9,468	Research	
3	24,814	Research	
A	24,929	Support	
5	7,224	Research	
6	15,000	Research	
7	3,975	Vacant	Renovate for research laboratories
8	4,461	Administration	Current occupancies in Buildings 8, 9, and 11 are relocated to proposed Building 31 (Replacement Building); renovate for alternative uses
9	3,156	Administration	
11	660	Administration	
12	7,690	Visual Medical Arts and Freezer Storage	Demolish; current occupancies relocated to proposed Building 31
13	17,800	Animal Research	Renovate to correct equipment and supply storage deficiencies
13B	5,880	Research	Retain
14	4,000	Storage	Demolish; current occupancy relocated temporarily to the HD complex and ultimately to proposed Building 31
15	1,092	Radiological Storage	Retain for radiological waste storage
16	3,520	Research Support	Demolish; current occupancy relocated to proposed Building 31 and Building 13B
17	2,975	Storage	Demolish; current occupancies relocated to proposed Building 31 and new Long-Term Storage Facility
21	2,843	Equipment Storage	Demolish; current occupancies relocated to new maintenance building
22	2,624	Central Stockroom	Demolish; current occupancy relocated to new central supply stockroom
23	2,356	Incinerator	Retain
24	700	East Emergency Generator	Demolish; relocate occupancy to expanded Building 27
25	15,332	Research	Retain
26	3,844	Central Boiler Plant	Retain
27	1,961	West Emergency Generator	Expand
28	105,000	Integrated Research Facility	Retain
29	7,525	Shipping and Receiving	Retain
30	3,562	Visitors' Center	Retain
HD1	3,072	Maintenance	Demolish; current HD1-5 maintenance occupancy relocated to new maintenance complex and temporary occupants from Building 14 relocated to proposed Building 31
HD2	1,120	Maintenance	
HD3	3,482	Maintenance	
HD4	512	Maintenance	
HD5	864	Maintenance	
SS1	384	Storage	Demolish; current SS1-3 occupancies relocated to new maintenance complex
SS2	216	Storage	
SS3	216	Storage	
ARMCO1	2,048	Storage	Demolish; current occupancies relocated to new animal facility
ARMCO2	2,048	Animal Research	Demolish; current occupancy relocated to new animal facility
T23	4,624	Maintenance	Demolish; current occupancy relocated to new maintenance complex
Total	309,223		

5.2.2 Master Plan Component Concepts

The following paragraphs describe the fundamental Master Plan recommendations.

Functional Relationships

The primary concept underlying the functional relationships in the Master Plan is the idea of locating the research laboratories in close proximity to animal facilities and the animal facilities immediately adjacent to each other. In turn, these central laboratory/animal facilities would be flanked on the north by administrative and supply support and on the west by the maintenance complex. New animal facilities would be planned for expansion to eventually replace Building 13. Administrative and central supply functions would be consolidated central to the uses they serve. Utility functions would remain in their current locations for efficient utility distribution, and maintenance facilities would be consolidated in the southwest corner of the site away from staff and visitor traffic.

Open Space

A 100' open space buffer zone would be maintained along the site perimeter serving as a visual buffer and a standoff to mitigate effects of any possible blast originating on the border of the site. This space would be landscaped to provide an attractive park-like setting while preserving needed views for surveillance. The Master Plan proposes surface parking at the north perimeter but no new structures within this buffer zone.

In the interior of the campus, the Master Plan proposes a Central Pedestrian Concourse with connections from the Quad and administrative support center to Buildings 13 and 25 and the IRF. This concept is well suited for creating a "campus" atmosphere with spaces and opportunities for random encounters and interaction.

Building Patterns

All new development would follow the orthogonal grid established by existing buildings. This pattern would be continued and built on with the placement of new buildings. Advantages of developing the campus on a grid system include ease of integration with existing orthogonally oriented structures, efficiency of land use, economical integration with, and extension of, the utility distribution system and the acknowledgment and further establishment of a clearly defined pattern to guide future growth.

Massing and Heights

The primary concept for building massing on the RML campus is concentrating the tallest structures along the central axis of the campus, with a transition in height to lower buildings toward the perimeter.

Circulation

The vehicular circulation concept for the campus provides a loop road at the building perimeter, outside the central pedestrian area, with access to surface parking outside the loop and primary building entrances to the interior of the road. The Master Plan would retain the two existing entries to the campus, the staff and visitor entrance from 4th and Grove Streets and the service entrance from 5th and Baker Streets. Two new emergency exits would be provided; one from the north parking lot to 6th Street, and the other from the south parking lot to 4th street, south of campus.

5.2.3 Land Use

Construction would be planned for the entire buildable area of the site, approximately 25 acres. Floodplain and wetlands to the west would remain unbuilt. Refer to Figure 5.2.3 for a summary of pervious and impervious areas. Also see Table 5.2.3.

Table 5.2.3 Master Plan Land Areas

Land Use	Acres	Percent of Site
Open Space		
Landscaped	11.1	30.8%
Other	7.9	22.0%
Circulation		
Parking, Roads, Walks, Service	11.3	31.4%
Buildings	5.7	15.8%
Totals	36	100%

5.2.4 Perimeter Buffers

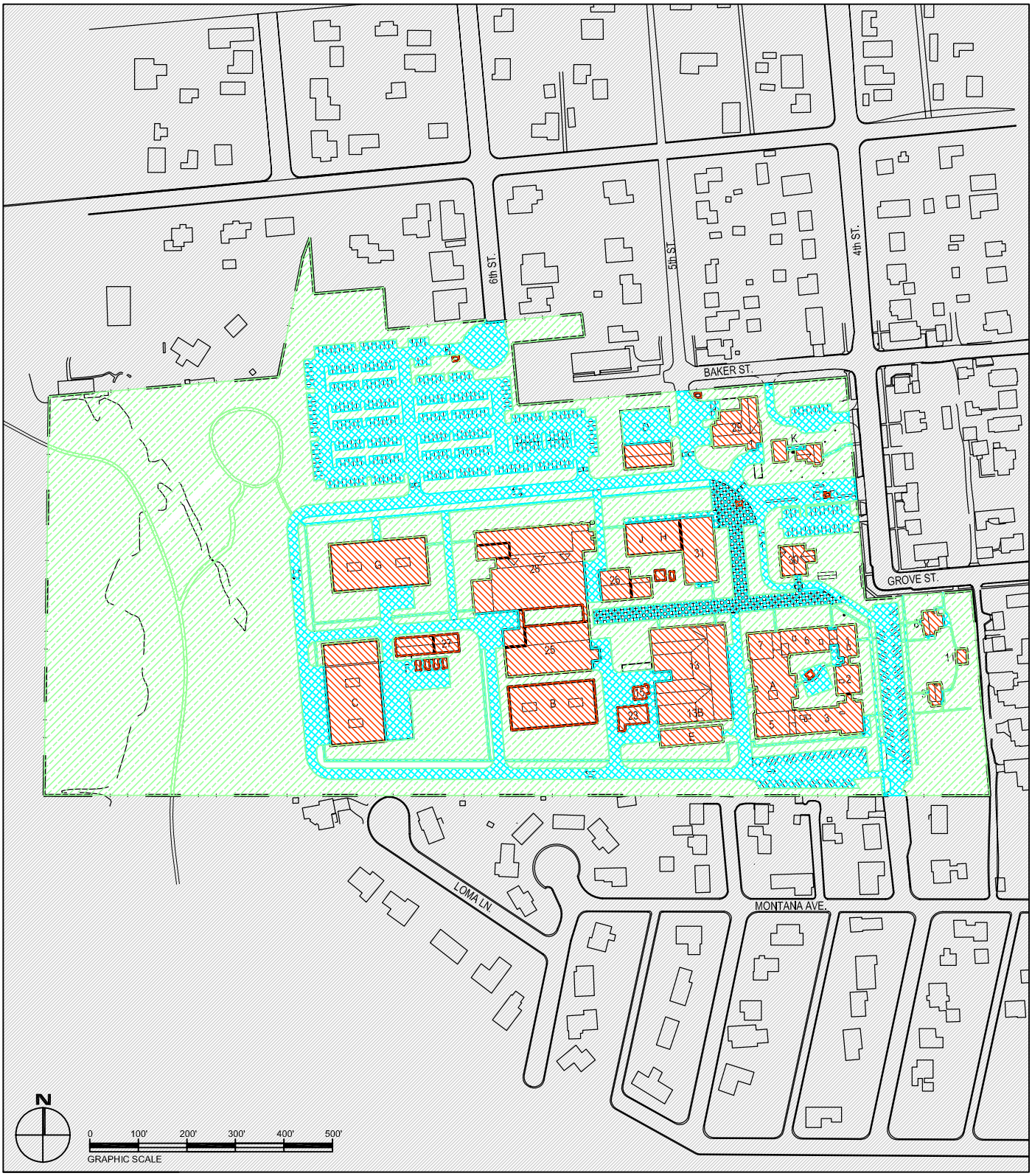
In order to achieve the Master Plan goal of ensuring that development on the RML campus respects and enhances the environment of the surrounding communities, open space buffers would be created around the perimeter of the site. The Master Plan proposes buffer zones extending a minimum of 100 feet inward from the RML property line. The guidelines below define the character and activities which should apply to all buffer areas:

- Buffers would primarily be landscaped open space
- Existing screen landscaping would remain and to be enhanced with additional plantings
- Plantings would be designed to frame attractive views into the campus
- Existing Buildings 1, 8, 9, 11 and 29 would remain
- No new permanently occupied buildings would be allowed
- Surface parking would be permitted along the north perimeter; existing surface parking east of the Quad and a portion of the parking now located south of Buildings 3 and 5 would remain
- Bikeways and walkways would be encouraged
- Utility easements and necessary infrastructure would remain
- Signage and lighting would be allowed for entry identification and direction

5.2.5 Open Space and Landscape

Indigenous plants integrate the man-made architectural elements into the natural landscape and reinforce the site's character. The guiding principles of the landscape plan serve to complement and reinforce the overall Master Plan by:

- Improving and strengthening the buffers between adjacent land uses,
- Using native plant materials,
- Minimizing water use,
- Preserving mature trees as the core of landscape planning,



NIH-RML Master Plan

Hamilton, Montana

Pervious Area

Impervious Area - Pavement

Impervious Area - Roof

Figure 5.2.3

Pervious and Impervious Areas

- Giving the plan identity and structure,
- Articulating the circulation system, and
- Creating a hierarchy of open spaces which will encourage interaction among RML staff and visitors.

Landscape design details are discussed in Section 6.5.2

5.2.6 Campus Amenities

Campus amenities can generally be divided into two groups: employee/visitor services and positive site features which enhance the use or image of the campus. The Master Plan addresses the issue of campus amenities in an effort to provide for the practical needs of employees as well as to create a campus setting which is conducive to attracting and retaining the highly qualified employees who are needed to carry out the mission of RML.

Amenity services would be programmed in accordance with the approved *Guidelines for Amenities and Services Within NIH Facilities, December 2004*. These would be located for easy access from staff population centers.

New or enhanced open spaces on campus, such as the Central Pedestrian Concourse, would be major site amenities for visual and recreational purposes. These spaces could be utilized for outdoor eating, campus gatherings and collegial interaction.

The landscaped area at the Historic Core could be extended across the 4th Street entrance area and offer a positive image for the public side of the campus as well as passive recreation space, and, of course, the Bitterroot Mountains to the west will remain as a beautiful backdrop for the campus plan.

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5.2.7 Reuse and Demolition

Table 5.2.1, above, shows the extent of building reuse and demolition proposed by the Master Plan. Most new construction and currently identified historic buildings on campus would be retained; however, over the 20-year period of the Master Plan, virtually all of the small, older buildings would be replaced.

5.2.8 Fire and Life Safety

All buildings on the RML campus are planned to have a minimum clearance of 30 feet from other structures to provide for fire separation and emergency vehicle access. Primary access would be the loop road. Emergency north-south travel could be accommodated through the Central Pedestrian Concourse and between the Quad and Building 13.

All major campus pedestrian pathways (such as the Central Pedestrian Concourse) should be designed to accommodate emergency vehicles. Landscape and path design allow for a clear path of 16 feet minimum width and 14 feet minimum height. When constructed, walkways should be designed to withstand occasional emergency vehicle loads.

The existing water supply has sufficient capacity to meet existing and projected campus fire flow requirements. Additional booster pumps would be installed at individual buildings where needed.

5.2.9 Parking

It is important that the RML maintain adequate parking on site to meet employee and visitor needs and avoid parking shortages which would encourage employees to park in residential neighborhoods. As a consequence, parking is planned on the basis of one space per staff member .

Estimated parking requirements for the 20-year plan are, accordingly, for 427 estimated personnel plus 24 spaces at the Visitor Center and 10 spaces at the Interpretive Center.

5.2.10 Service Access

All delivery truck traffic would continue to access the RML campus at the 5th and Baker Streets service entrance; commercial traffic is planned to be restricted from further entry into the site by vehicle barriers. All supplies would be broken out and inspected at the Shipping and Receiving Building and internally delivered by RML staff. A new Long-Term Storage Facility, with a storage building and screened dumpster yard, would be located within the restricted service access area across from the Shipping and Receiving Building.

The Master Plan would consolidate and simplify service access on the RML campus to avoid conflicts with pedestrians and passenger vehicles, minimize the negative visual impacts of multiple service areas, and enhance site security.

5.2.11 Physical Security

The Master Plan would enhance the current new perimeter fence with staffed and monitored entrance gates and/or turnstiles to control access into the campus. Additional openings in the perimeter beyond those planned in this Master Plan would potentially tax personnel resources and physical security. Therefore, the perimeter should not be altered. All new construction would comply with the *NIH Physical Security Design Guidelines* to ensure the safety of persons and research.

Visitors would be screened in the Visitor Center and, as noted above, deliveries are screened in the Shipping and Receiving Building.

5.2.12 Waste Management

Disposal methodology and space requirements for waste management were estimated by RML based on a study, *Medical Waste Disposal Alternatives at Rocky Mountain Laboratories*, *September 2007*, which addressed municipal solid wastes, medical/pathological/lab wastes, hazardous chemical waste, radioactive waste and recycled materials.

Based on available information and the maturity of current technologies the study determined that, at this time, incineration of all medical type wastes is the technology best suited for RML, and the Master Plan proposes to retain the current incinerator. The NIH and the RML will continue to consider alternative waste disposal technologies as these evolve and as campus operations and needs change in the future.

The study also identified waste streams from generation points to collection and disposal areas, and circulation provisions in the Master Plan incorporate these waste movement requirements.

5.3 Utilities

A Master Utility Plan (MUP) for RML is currently being prepared. Projects developed for the Master Plan will be coordinated with the MUP. In general, new projects should be planned to minimize the interruption of utility services to existing campus buildings. Additional attention should be given to potential utility conflicts as noted below.

5.3.1 Steam

Refer to Figure 5.3-a. Principal steam lines run beneath the service drive between the Quad and Buildings 13/13B, in the planned Central Pedestrian Concourse adjacent to Buildings 13, 26 and 31, and to the west of Building 25. Many of these lines are at their limit in terms of slope and should not be disturbed or relocated.

5.3.2 Chilled Water

Refer to Figure 5.3-a. A critical chilled water line runs under the service drive between the Quad and Buildings 13/13B and across the planned Pedestrian Concourse. While the Master Plan does not anticipate new projects that would adversely affect this utility, construction that would affect this line is discouraged.

5.3.3 Natural Gas

Refer to Figure 5.3-a. A 6” gas main enters the site and runs under the proposed loop road from the vicinity of the proposed Long Term Storage Facility to Building 26. This is a critical utility which future construction should avoid disturbing.

5.3.4 Power & Signal

Refer to Figure 5.3-b. Critical underground power and signal lines run under the proposed Pedestrian Concourse, between Buildings 30 and 31, between the Quad and Buildings 13/13B, north of Building 28, between and west of Buildings 28 and 25, south of the ARMCO buildings, and in the western portion of the campus roughly on axis with the Central Pedestrian Concourse. Construction projects anticipated by the Master Plan that would affect these lines must retain service to existing buildings served by these lines throughout construction. Should the Building 28 plant expansion noted in Chapter 4, Section 4.9.3, become necessary, this project must also be planned so that service to existing buildings is retained. Existing aerial lines providing power to the West Distribution system may require modifications to accommodate the improvements associated with the acquisition of the north properties. If necessary, these modifications will be explored in greater detail in the MUP currently being developed.

5.3.5 Water

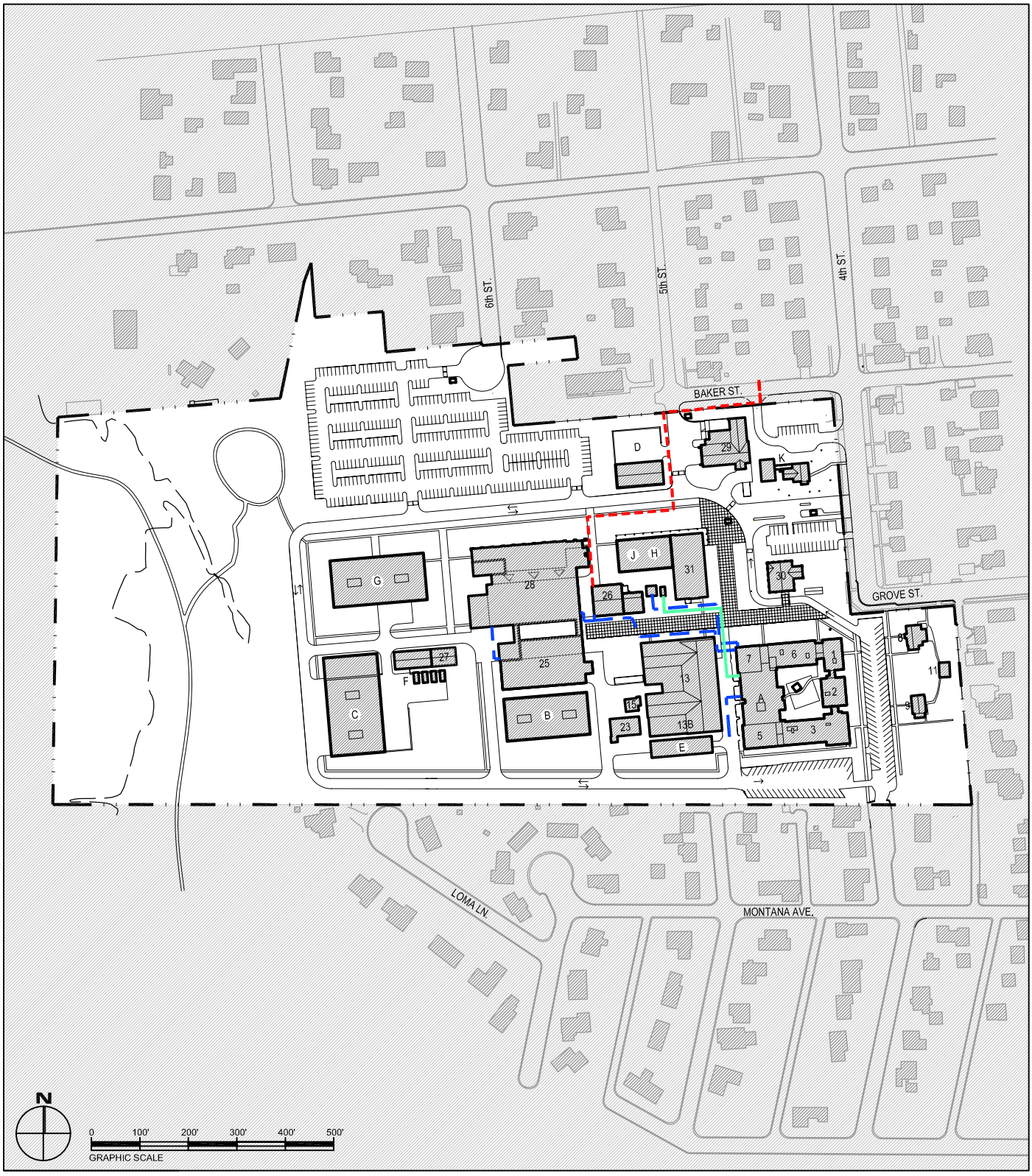
Refer to Figure 5.3-c. Critical water routing runs around the Quad, under the central Pedestrian Concourse and around the east, north and west sides of Building 29. The Master Plan does not propose any construction that would adversely affect these lines.

5.3.6 Sanitary Sewer

Refer to Figure 5.3-c. Critical sanitary sewer lines run under the parking area east of the Quad, between the Quad and Buildings 13/13B, beneath the proposed Pedestrian Concourse, south of Building 25, west of Buildings 25 and 28, west of Building 29, and from Building 13B to the middle of the campus’ current northern boundary. The Master Plan does not propose any construction that would adversely affect these lines.

5.3.7 Storm Water

The NIH is implementing Best Management Practices (BMPs) at its facilities to control the quantity and quality of its storm water run off. As the Master Plan is implemented over the years,



NIH-RML Master Plan
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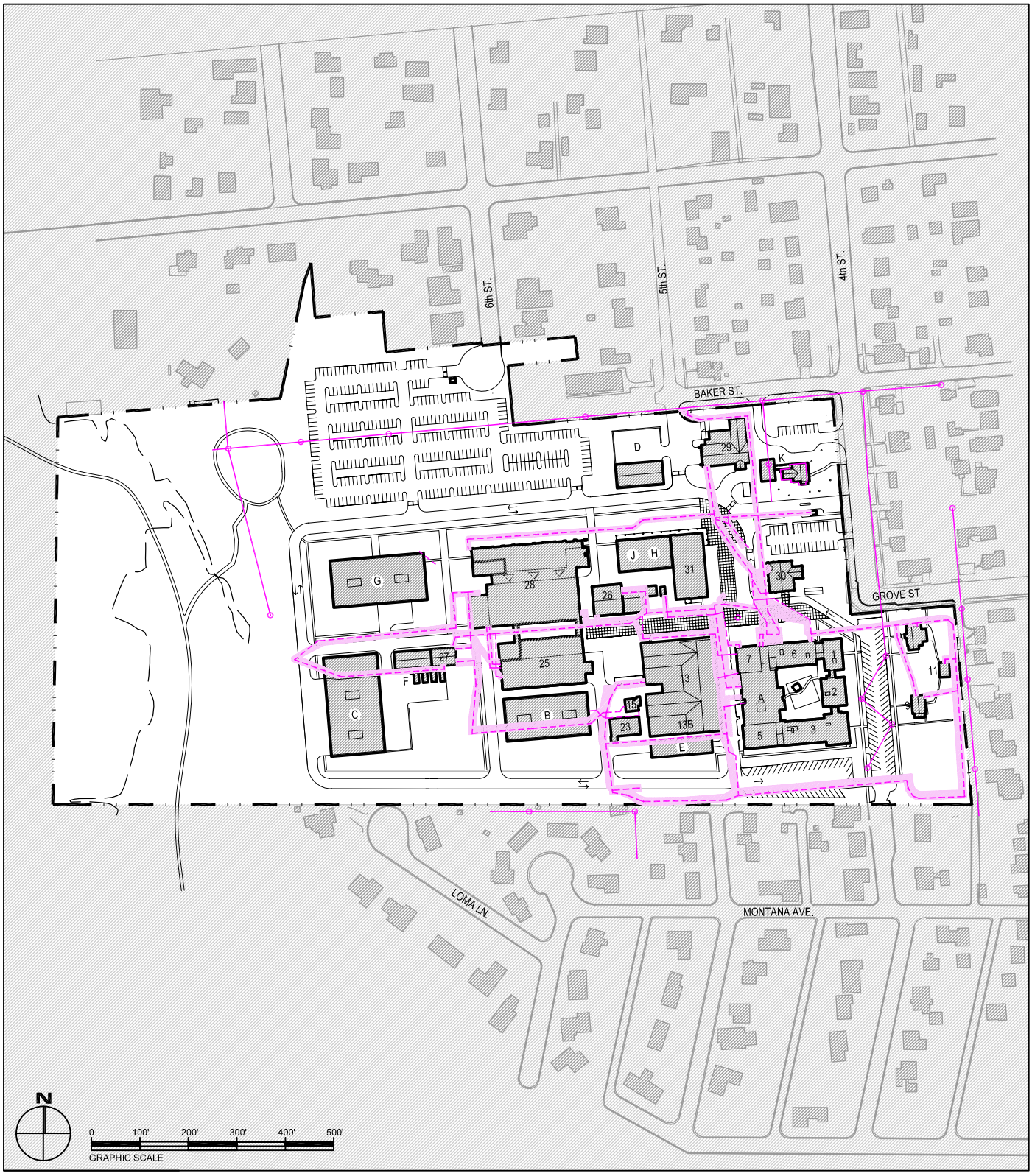
STEAM LINE
CHILLED WATER LINE
NATURAL GAS LINE

Figure 5.3-a

Key Utility Lines- Steam, Chilled Water, and Natural Gas



NIH-RML Master Plan
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UNDERGROUND DUCT BANK
OVERHEAD POWER LINE
POLE

Figure 5.3-b

Key Utility Lines- Power and Signal

NIH-RML Master Plan
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WATER LINE

SANITARY SEWER LINE

Figure 5.3-c

Key Utility Lines- Water and Sanitary Sewer

the NIH would strive to decrease storm water runoff as much as possible but with an overall goal of no net increase in storm water runoff from the site after full development of the site.

5.3.8 Campus Generator and Fuel Storage Expansion

A study is underway to increase and consolidate campus emergency generator capacity and fuel storage. The Master Plan would include expansion of the West Power Plant (Building 27), and increased fuel oil storage capacity in multiple, above-ground storage tanks. These elements must remain inside the campus perimeter security standoff. Additional security measures for these elements may also be required at the direction of the NIH Division of Physical Security Management.

5.4 Master Plan Implementation

Programming for growth under the Master Plan is phased over a 20-year period in accordance with time frames established during the interview and data collection processes and personnel needs during these time frames estimated by RML staff and the Steering Committee.. Based on these expressed needs the bulk of construction would need to be completed in the initial period largely to provide facilities to support the IRF as well as to correct current deficiencies. Over the ensuing years, required additional space would total only 23,322 gross square feet to support the anticipated slow rate of personnel growth. This statement of estimated space needs based on estimated population growth is set forth in Tables 5.1.3.A and 5.1.3.B.

Implementation planning, on the other hand, must consider funding availability and the logistics of construction phasing.

Additionally, implementation of any of the projects that make up the Master Plan is dependent upon various actions, some of which are within NIH's or RML's control; others are not and are under the control of groups such as HHS or the Congress or a consequence of presidential priorities and mandates. The timing of actual construction at RML would be related to the level of future staff growth, the program-driven demands for the facility in question, the availability of funding to construct the project, and considerations such as the need to provide ancillary facilities to support the construction of primary facilities. For example, the research activities anticipated for the Integrated Research Facility (IRF) could utilize expanded animal facilities, campus maintenance, general storage, waste management and parking.

During the initial construction phase only those projects that are already funded, and essential, smaller scale, works for which funding could be immediately obtained can realistically be undertaken. Functional priorities, for the most part, would be deferred to the subsequent time frame.

Planned construction phasing is presented in Table 5.4.1 along with required demolition and new construction areas by line item. Resulting gross area increases and demolition by function and phase are presented in Table 5.4.2. Based on implementation planning, total gross building area at the end of the 20-year planning period is estimated to be 445,713 square feet as opposed to the estimated programmatic need of 431,690 square feet set forth in Tables 5.1.3.A and 5.1.3.B, an increase of 14,023 square feet. This additional area derives from two sources. One of these is Buildings 8, 9 and 11 that are designated an historic resource and cannot be demolished. At the same time, they are located within the secure standoff area and cannot be occupied by functions that require fixed staffing. Within these guidelines, of the 8,277 square feet in these buildings the only portion of the estimated program need they can accommodate is 2,604 square feet for amenities including fitness facilities and changing rooms leaving a balance 5,673 square feet for which there is no current programmed need. The other is Building 31 which was built to include surge space for occupancies relocated from buildings to be demolished in the standoff area. These occupancies are temporary pending new construction for their permanent accommodation.

For example, laboratory space and central freezer storage are to be located in Building 31 pending construction of the new research building at which time they will move and the space in Building 31 will be vacated. The resultant vacant space in Building 31 is estimated to be 8,350 square feet. The unoccupied 14,023 square feet in these four buildings is designated Director's Reserve to be used for future surge space during renovation programs, for accommodation of new needs pending new construction and for temporary, short term needs that may arise.

Source Data: Oudens + Knoop Architects, PC

NIH-RML Master Plan
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B	Veterinary Branch
C	Maintenance
D	Long Term Storage Facility
E	Short Term Storage Facility
F	Generator Expansion/Centralization
G	Research Laboratory
H	Central Stock Room
J	Seminar Room
K	Interpretive Center

Property Line
Fence
Central Pedestrian Concourse

Figure 5.2

Illustrative 20 year Master Plan

NIH/ORF/DFP

LSY Architects

Oudens + Knoop Architects, PC

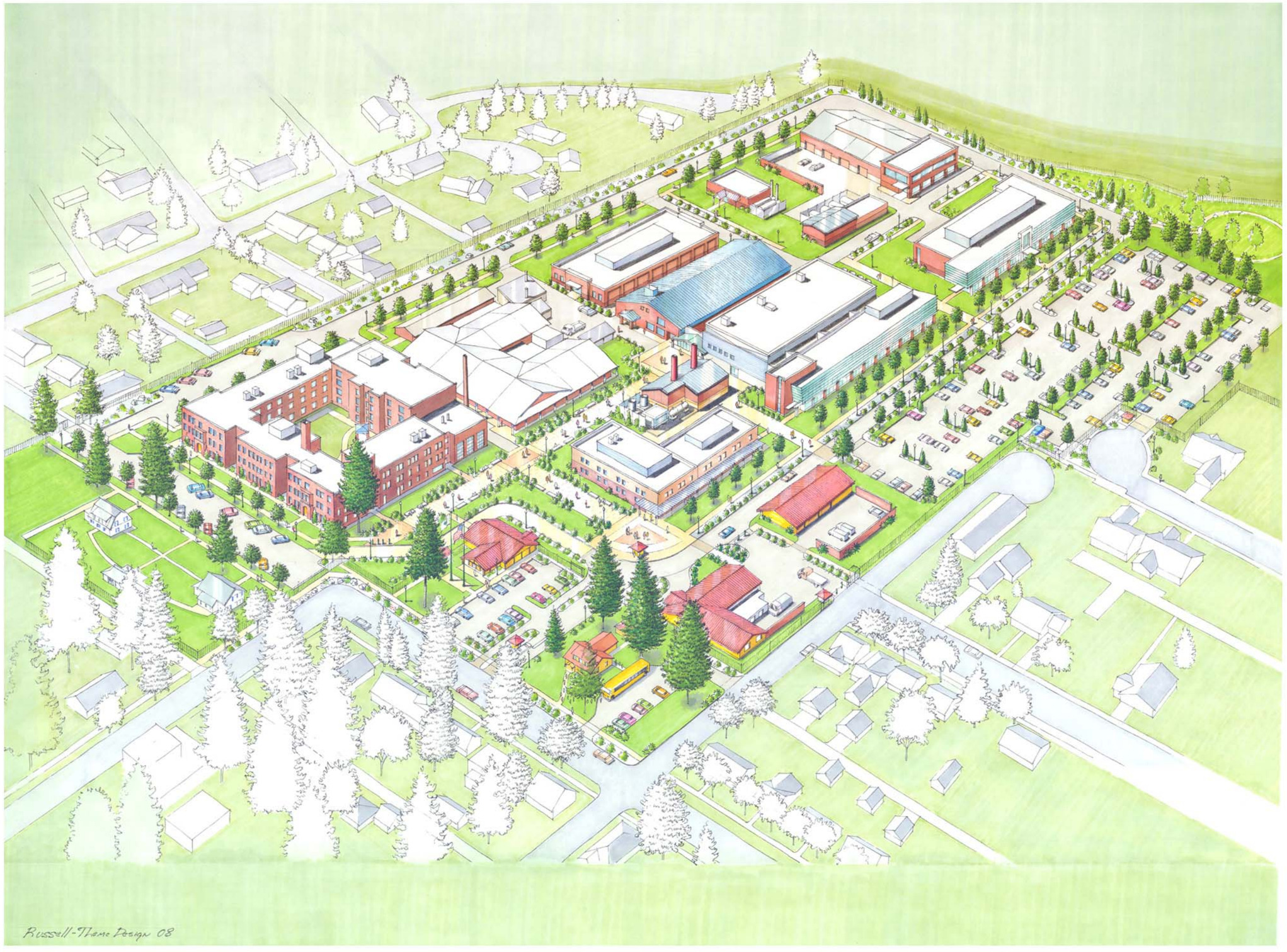


Figure 5.2a- Concept Rendering of Campus- Aerial View

Table 5.4.1
Implementation Phasing

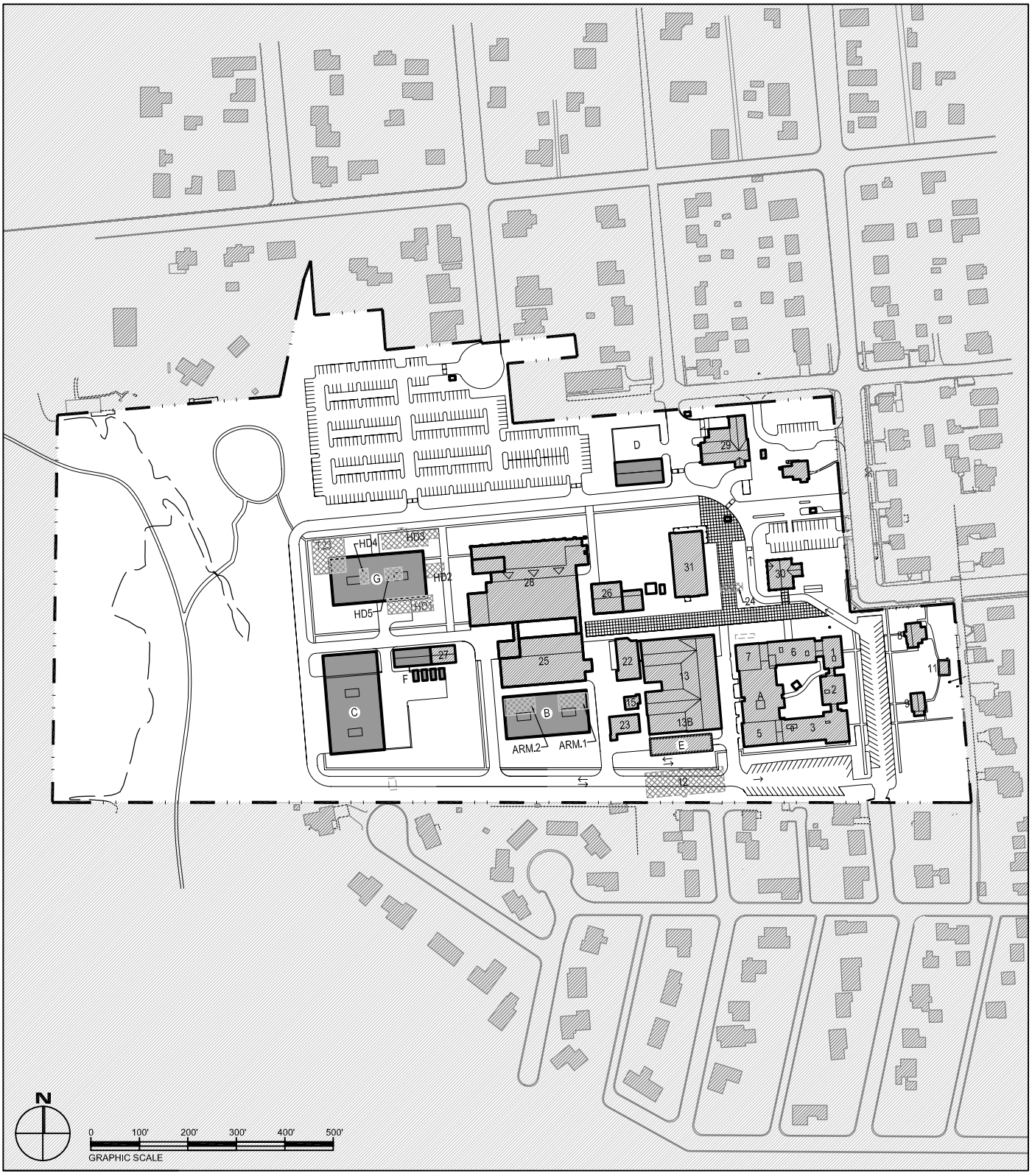
	Demolish (gsf)	Construct (gsf)
Phase 1 (Figure 5.1.4a)		
Demolish Building 14	4,000	
Construct Building 31		25,920
Demolish Buildings 16, 17, and 21	9,338	
Construct short term storage (Building E)		4,800
Purchase north and northeast properties		
Relocate Building T23		
Construct loop road, parking, landscape improvements and a security fence around the new north property		
Demolish duplex house on northeast property and construct parking		
Construct temporary animal facility as required (Building 32)		
Install tank farm at Building 22		
Construct central pedestrian concourse		
Phase 2 (Figure 5.1.4b)		
Construct central maintenance facility and general equipment storage (Building C)		30,316
Construct central generator plant addition (Building F)		2,000
Demolish HD and T23 building complex	14,490	
Construct research laboratory building and mechanical plan expansion (Building G)		58,721
Construct amenities in Building G		672
Demolish Building 12	7,690	
Revise loop road at demolished Building 12 and construct landscape improvements		
Relocate ARMCO 1 and 2 activities to temporary facilities		
Demolish ARMCO 1 and 2	4,096	
Construct animal facility (Building B)		34,315
Demolish temporary animal facility (Building 32)		
Construct long-term storage (Building D)		4,030
Demolish Building 24	700	
Construct parking and landscape improvements		
Complete central pedestrian concourse		
Phase 3 (Figure 5.1.4c)		
Construct central stock room and seminar room (Building H/J)		15,244
Demolish Building 22	2,624	
Reposition tank farm at Building 13 service entrance		
Phase 4 (Figure 5.1.4d)		
Construct interpretive center (remodel log house and build addition) (Building K)		3,410
Totals	42,938	179,428

NIH-RML Master Plan
Hamilton, Montana

31 Administration/Laboratory (Under construction)
E Incinerator Storage Facility

Figure 5.4.1a

Phase 1 Implementation Diagram

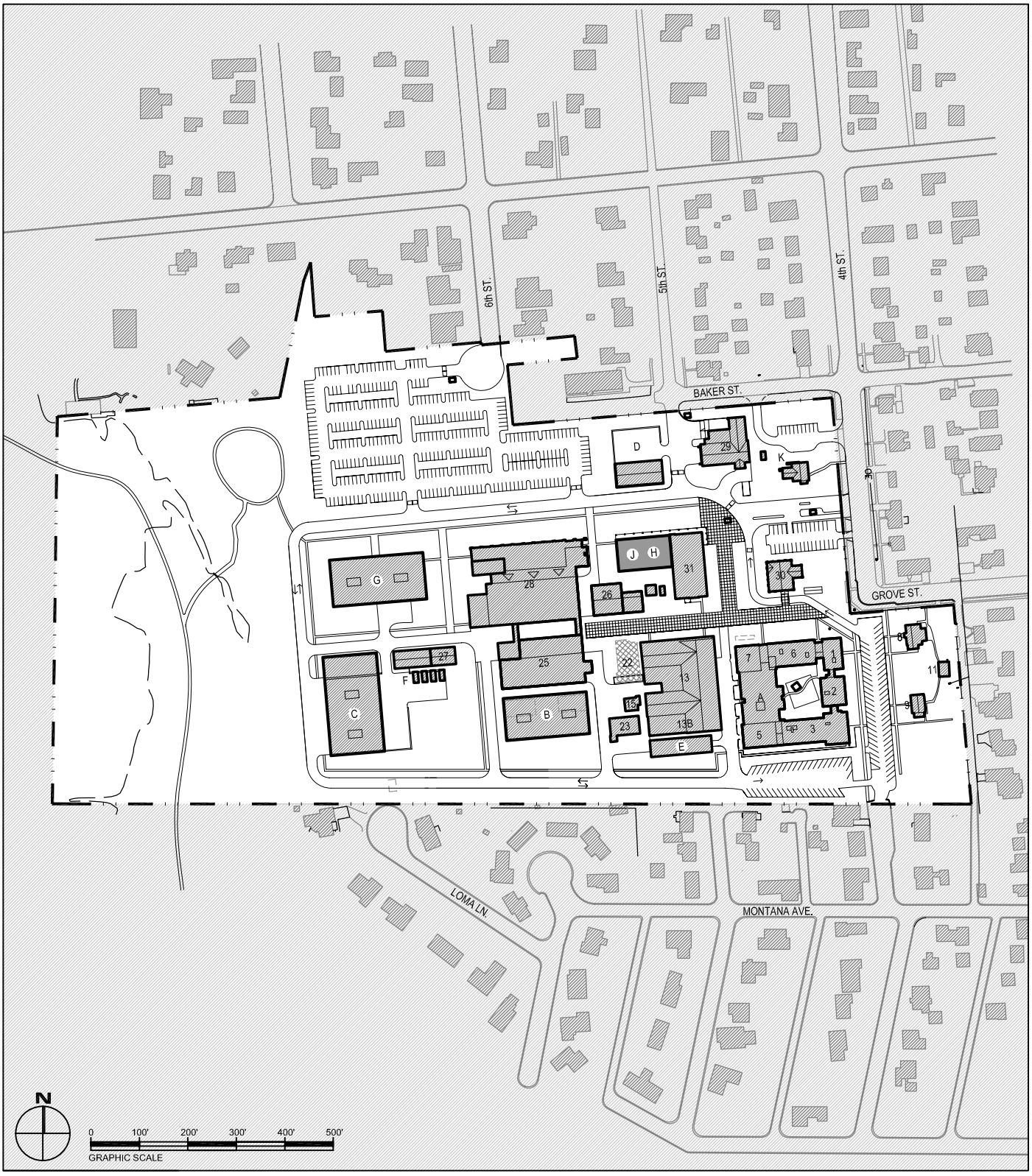


NIH-RML Master Plan
Hamilton, Montana

B Veterinary Branch
C Maintenance
D Long Term Storage Facility
F Generator Expansion/Centralization
G Research Labratory

Figure 5.4.1b

Phase 2 Implementation Diagram



NIH-RML Master Plan
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H Central Stock Room
J Seminar Room

Figure 5.4.1c

Phase 3 Implementation Diagram

NIH-RML Master Plan
Hamilton, Montana

K Interpretive Center

Figure 5.4.1d

Phase 4 Implementation Diagram

Table 5.4.2
Gross Area Increases and Demolition by Phase

	Program	Baseline	Phase 1	Phase 2	Phase 3	Phase 4	Totals
Laboratory, Director's Reserve and Shared Laboratory Support	161,604	113,398	113,398	161,604	161,604	161,604	161,604
Seminar Room B	3,474	0	0	0	3,474	3,474	3,474
Integrated Research Facility	103,190	103,190	103,190	103,190	103,190	103,190	103,190
Veterinary Branch	63,158	37,157	37,157	63,158	63,158	63,158	63,158
Administrative Services	17,570	13,042	17,570	17,570	17,570	17,570	17,570
Dir. Reserve – Bldg 31	8,350	0	0	7,845	8,350	8,350	8,350
Dir. Reserve – Bldgs 8, 9, 11	5,673	0	5,450	5,673	5,673	5,673	5,673
Maintenance Shops	23,716	12,798	12,798	23,716	23,716	23,716	23,716
Equipment Storage	6,600	3,659	3,659	6,600	6,600	6,600	6,600
Central Stockroom	11,770	3,129	3,129	3,129	11,770	11,770	11,770
Interpretive Center	3,410	0	0	0	0	3,410	3,410
Visitor Center	3,562	3,562	3,562	3,562	3,562	3,562	3,562
Shipping and Receiving	7,525	7,525	7,525	7,525	7,525	7,525	7,525
Long Term Storage	9,922	1,092	5,892	9,922	9,922	9,922	9,922
Incinerator	2,356	2,356	2,356	2,356	2,356	2,356	2,356
Central Plant	10,557	8,315	8,315	10,557	10,557	10,557	10,557
Amenities	3,276	0	2,604	3,276	3,276	3,276	3,276
Totals	445,713	309,223	326,605	429,683	442,303	445,713	445,713
Demolition			13,338	26,976	2,624	0	42,938
New Construction			30,720	130,054	15,244	3,410	179,428

A brief description of each of the proposed Master Plan projects follows.

RMVB Expansion—Building "B", and the ARMCO Buildings

The RMVB expansion would be planned as a new, 34,300 gsf, one-story plus basement, animal holding and research facility in the south-central area of the campus on land currently occupied by the ARMCO buildings south of Building 25. With Building "B" in place, animal space on the campus would increase by approximately 26,000 gsf, from 37,200 to 63,200 gsf. ARMCO 2 contains animal surgery, a critical support function that would need to be accommodated in temporary facilities during the construction of the RMVB expansion. The site immediately west of the planned RMVB expansion is recommended for consideration for this temporary facility.

Research Laboratory Building "G" and the HD Complex

Research Laboratory Building "G" would be a new, two-story plus basement, laboratory building located in the western portion of the campus in an area presently occupied by the HD Building complex which houses campus maintenance activities. The approximate 58,700 gsf building would provide needed laboratory and shared support space, break rooms, and small meeting rooms to support basic scientific research activities. Completion of the planned Maintenance Complex (Building "C") would be necessary to permit the removal of the HD Building complex in order to make its site available for the construction of Laboratory Building "G".

Figure 5.4.2a- Concept rendering of IRF and Laboratory Building "G", with Loop Road in the foreground

Maintenance Shops and Storage and Equipment Storage, Building "C"

Current maintenance staff at RML is located in temporary leased trailers in the northern portion of the site. With future expansion of the campus and the completion of the Integrated Research Facility, maintenance responsibilities would grow. The Master Plan calls for constructing a new, approximately 30,300 gsf Maintenance Complex (Building "C"), with offices, shops, support space, conference/break rooms, maintenance, storage areas, lockers, showers, and toilet facilities and general equipment storage in the far southwestern corner of the campus. The support facility would provide larger and more functional space for current and future maintenance personnel as well as the NIH Police. In addition, paved areas would be planned on the east and west sides of the main building to park maintenance and public safety vehicles and allow for outside storage of maintenance-related equipment. Screen walls and landscaping would be used to screen unsightly views of the yard from off-site areas.

Long Term Storage Facility, Building "D"

This new facility, located on the north edge of the campus west of the Shipping and Receiving Building, would be essentially a marshalling facility for items RML intends to hold for a short period of time before they would be removed from campus by individuals or private contractors. These items would include recycled waste, general waste, and surplus equipment awaiting donation or removal from campus. In addition to the 4,000 gsf building, an outside storage yard would contain closed compacting-type dumpsters for trash and recycled waste. The yard would be screened from off-site views via an attractively designed screen wall.

Short Term Storage Facility, Building "E"

Medical pathological waste (MPW) generated on the campus needs to be in a separate facility close to Building 23, the site of the campus incinerator. The Master Plan includes Building "E", a 4,800 gsf building where MPW would be stored in approved containers until treated, with any residue subsequently taken off-site to be landfilled. The new facility would be screened from off-site views.

Generator Expansion/Centralization, Building "F"

The campus Master Plan is based on changes to the site's electrical service so that the entire campus, except for the IRF, would be fed from a central facility, Building 27. Two generators are to be relocated to a location near the existing generator in Building 27 and a third generator would be added to accomplish this. In addition, switchgear would be installed to allow all generators to operate in a parallel fashion to meet overall campus demand and provide for "N+1" redundancy, allowing one unit to be down for maintenance at any given time. Under the plan, Building 27 would be expanded by 2,000 gsf. Also proposed in the area of the Generator Expansion project would be four, above ground fuel tanks with a storage capacity of 15,000 gallons each and a common fuel handling system.

Central Stockroom, Building "H"

The planned 11,800 gsf central stockroom, Building "H", would be centrally located near Buildings 28, 31, and the Quad to be convenient to the research and administrative staff who frequent the facility.

Seminar Room, Building "J"

Building "J", the Seminar Room, would expand RML's conferencing capability. The location of the Seminar Room would be based on its proximity to the Quad, Building 31, and the Visitor's Center. The facility would be approximately 3,500 gsf in size.

Interpretive Center, Building "K"

This remodeled log house and 3,400 gsf addition would be built on newly acquired property located just outside the current northeast boundary of the campus. The Center would be planned for school groups on field trips or others interested in the history of the campus. The Master Plan expects that visiting classes would consist of no more than thirty students. Parking for a small number of personal vehicles (and possibly a school bus) would be proposed as well.

Figure 5.4.2b- Concept rendering of Interpretive Center entry

Conversion and renovation of Building 7

Originally a central mechanical plant, Building 7 would be renovated as research laboratory space under the Master Plan.

Property Acquisition

Two planning alternatives were prepared to study the accommodation of estimated requirements with and without acquisition of available properties along the northern boundary of the site. It was determined that acquisition of property to the north would allow RML to meet expanded requirements for parking while diminishing the parking on the south side and interior portion of the campus. Also, acquisition of this land would enhance the security buffer between the community and the IRF, RML's high containment building.

In addition, during a master planning workshop with the Hamilton community on May 5, 2007, the participants suggested that NIH purchase the property at the northeast corner of the site to enhance the site's entrance and provide an opportunity for the RML to create an Interpretive Center that would be publicly accessible outside the secure boundary of the campus. The community recommended a Center with classrooms, a museum, displays and other facilities, as appropriate, to inform the community of the history of the campus and the scientific accomplishments of the RML. During the initial implementation phase, the log house would be remodeled as the first phase of the Interpretive Center, and the duplex house would be demolished to provide area to park visitor vehicles.

In 2003, HHS approved funding for the planned acquisition of the north and northeast properties. As funding is in place for the purchase, the Master Plan recommends making their acquisition a priority, and the plan recommends acquisition in the initial phase. In accordance with the National Environmental Policy Act process, NIH will complete an environmental document for the purchase prior to any acquisition.

General Site Improvements

Pedestrian Concourse

A pedestrian precinct would be established within the interior portion of the campus on the axis of Grove Street extended to provide a campus focal point and reduce potential pedestrian/vehicle conflicts. Vehicles would not be permitted within the precinct, except for emergency vehicles. The area would have special paving materials and attractive and well-maintained landscaping. Additional green space would be distributed throughout the site and along the perimeter of the campus to make it more visually appealing and pedestrian-friendly.

Landscaping (emphasizing native plant materials), durable site furnishings (benches, trash receptacles, bicycle racks, etc.) and site signage would be improved and coordinated.

Attractive pedestrian-scale light fixtures**,** matching the campus standard, would be provided along walkways and at building entrances. The use of banners would also be encouraged to add visual interest and color to the campus.

The plan also recommends placing overhead utilities underground as utility improvements are made in the future.

Figure 5.4.2c- Concept rendering of Pedestrian Concourse

Off-Street Parking Expansion

The Master Plan would provide for expanding employee parking on the campus to 427 spaces to accommodate planned growth and satisfy security requirements. This also involves consolidating parking that is now scattered throughout the site, removing it from the center of campus. This, in turn, would create a more favorable pedestrian environment in the center of campus. Parking to be expanded and relocated to the north in the vicinity of Baker Street would be phased, to the extent practical, to coincide with phased campus Master Plan development.