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United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC NAME: **Rocky Mountain Laboratory Historic District**

LOCATION: 900 block of 4th Street
Hamilton, Ravalli County (081), Montana (030)
CLASSIFICATION: Public Ownership
Occupied
Access Restricted
Research Laboratory
OWNERSHIP: National Institutes of Health
Federal Historic Preservation Officer: Mr. Paul Cromwell, Deputy Director, Office of Environmental Affairs, Department of Health and Human Services, Room 523 H, 200 Independence Ave. SW, Washington, D.C. 20201 (202-245-0287)
LOCATION OF LEGAL DESCRIPTION: Ravalli County Courthouse, Bedford St., Hamilton, Montana
REPRESENTATION IN EXISTING SURVEYS: Hamilton Historic Resource Survey, sponsored by Bitter Root Valley Historical Museum, Bedford St., Hamilton, Montana (1987)
DEPOSITORY OF SURVEY MATERIALS: Montana State Historic Preservation Office, 102 Broadway, Helena, Montana.

PHYSICAL DESCRIPTION: **Rocky Mountain Laboratory Historic District**

CONTRIBUTING BUILDINGS: 10 NONCONTRIBUTING BUILDINGS: 0

The Rocky Mountain Laboratory Historic District is located a the south end of S. 4th St. in Hamilton, Montana, near the edge of the city limits. The residential character of S. 4th St., which dead-ends just past the Lab, is maintained through the district by the boulevards lined with mature deciduous trees. The historic district encompasses two Colonial Revival style employees' residences, with their shared garage (Buildings #8-#10), on the east side of the street and the residences and the original portion of the laboratory complex on the west side. The boundary for the historic district includes only the historic portion of the laboratory complex (Buildings #1-#7).

Building #1, constructed in 1927, was designed in a tripartite scheme with the base in brick with a concrete belt course just below the first floor window sill level. The body of the building is of common bond, multi-colored, striated brick and starts at the sill level of the first floor windows and terminates at the head of the third floor windows. Above the concrete belt course that separates the body and the cornice is a crenelated brick parapet with a cast concrete cap. The windows are tall, 9-over-1, vertical proportion, double hung units. The second and third floor windows have a cast concrete sill. The main entry vestibule of the building projects approximately 8' from the facade and has a width of approximately 10' and is of brick construction with corner quoining

and terminated on the top and at each corner by a square block and ball motif of cast in concrete. The vestibule is one-story high and is identified by a cast concrete surround of relief molding with a shield motif centered above the door. The segmental arched, wooden door has small, divided lights in the upper third. Above the entry is a second story bay with narrow 6-over-1 double hung windows and cast concrete window surrounds. Corners of the building are ornamented with quoining of cast concrete block. A brass plaque attached to the building reads: "United States Public Health Service, National Institute of Health, Rocky Mountain Laboratory."

Building #1 is connected by a recessed, enclosed, three-story hallway with Building #2, which was constructed in 1932-34. Building #3, which was constructed in 1938, is linked to Building #2 in a similar fashion. The detailing of Buildings #2 and #3 is identical to that of Building #1, with the exception that the main entries. No access to 4th Street is provided on Building #2, and the entry vestibule on Building #3 projects only about 5' from the facade. This vestibule features a recessed doorway, one step up into a small foyer that has a rounded Romanesque cast concrete arch with voussoirs. The wooden door is a multi-paned light with wooden mullions. Above the doorway is the medical insignia of a winged scepter staff with two snakes. A second-story bay, designed to compliment the bay of Building #1, projects from the facade of Building #3 above the entry.

Building #4, constructed in 1936-37, is attached with an enclosed hallway to the rear of Building #2; Building #5 to the rear of Building #3; and Building #6 to the rear of Building #1. Building #4 was used for animal quarters, storage and a garage. Buildings #5 and #6 were built as a result of a major expansion in 1938 and were put into service by June, 1940. All of these later buildings are simple, rectangular masonry buildings, two-stories in height, with regularly spaced windows set singly or in pairs. The windows are all wooden, double hung units, with 1-over-1 or 6-over-1 sash configurations. Between Buildings #1 and #6 is an open-sided carport.

From Building #6, a covered walkway leads to the Heating Plant (#7) that appears to be original to the construction of the complex. The Heating Plant was erected in 1938-40 and is a masonry building three-stories in height. There are three, large, multi-paned windows with metal mullion that rise a full two stories on the east elevation. On the west side of the building is a tall, round, masonry smokestack.

The two late Colonial Revival style residences, together with the shared garage, are located across the street from the laboratory complex and were all built by the U.S. Government to house lab workers. Building #8, constructed in 1936-37, is a two-story, rectangular, wood frame residence on a concrete foundation. The gable roof runs parallel to 4th Street and has a 10/12 pitch and slight eave returns. Beneath the eaves is a molded fascia that provides a

lateral overhang of approximately 6 inches. A sun room projects from the south elevation, and has a balcony above with a diamond pattern, 2" x 2" balustrade. The lap siding shows a 7" reveal, and is finished with vertical corner trim. First story windows are flanked by wooden shutters and are uneven in proportions, being 8-over-12 wooden, double hung units. From the second story window sill level, beveled tongue and groove siding with vertical trim finishes the dormered wall surface. The dormer windows are 8-over-8 double hung units. The house is completely symmetrical on the facade, with a central entry. The doorway is approached by four risers and is protected by an enclosed, bow-roofed portico, lit by multi-light wooden windows. Portico detailing includes square columns at the corners with square capitals. Landscaping is finished with vertical evergreens to accent the corners and entryway, with low-growing, horizontal evergreens between the verticals. This house retains complete historic architectural integrity.

Building #9, also built in 1936-37, is a two-story, gambrel-roofed residence, with a second story shed-roofed dormer projecting from the ridge line. Rectangular in shape and set on a concrete foundation, the building is symmetrically organized with a central entry flanked by two small, projecting, bay windows set beneath the flared overhang of the gambrel roof. The windows of the bays are 8-over-12 in the center and 4-over-6 on each angle. Other windows are 8-over-12 on the first floor and 8-over-8 on the second. The windows of the dormer are flanked by wooden shutters. The eaves on the end walls are cropped short with about a 6" overhang. The entry is marked by a gable-roofed, arched overdoor that is cut into the eave overhang and accessed by a three-riser concrete stoop. The house is sheathed in lap siding with a 7" reveal and mitered corners. To the east side (rear) of the house is a patio covered with corrugated fiberglass, which appears to be a later addition.

The garage, Building #10, was also built in 1937 and sets far back on the block between the two residences. This wood frame, two-car garage has a hipped roof with a gablet at the ridge and is of a generous size. It is sheathed in 7" reveal lap siding with vertical corner boards and has cross-buck relief doors with 9-lights on the west elevation. It is symmetrical in design and has very tightly cropped eaves and a slightly projecting molded fascia board. Banded, 6-light windows are cut into three sides and garage doors open to the alley to the east.

STATEMENT OF SIGNIFICANCE: **Rocky Mountain Laboratory Historic District**

Areas of Significance: science, architecture
Criteria: A and C
Criteria Exception: G
Period of Significance: 1927-1945

From its origins in 1921 as a rudimentary laboratory located an abandoned

school house manned by a half-dozen employees, the Rocky Mountain Laboratory evolved over the next 25 years into a modern research facility staffed by 116 scientists and support personnel. Constructed between 1927-1940, the laboratory is significant for its association with the major, pioneering advances in the development of vaccines for insect-borne diseases accomplished here. For twenty years, the Rocky Mountain Laboratory assumed primary responsibility for applied research of infectious disease outbreaks in the Rocky Mountain region and, in fulfilling that role, rose to the forefront of scientific research facilities in the country. The presence of the laboratory in Hamilton bolstered the local economy during the years of the Great Depression, providing a stable employment base. The period of significance for the Rocky Mountain Laboratory Historic District extends to 1945 due to the critical role the laboratory played in disease control and vaccine production during the Second World War.

The primary laboratory buildings, the power plant, and the two residences included in this nomination also possess architectural significance in the context of the type and quality of construction found in Hamilton, Montana. The cohesive facades, massing and detailing of the understated Collegiate Gothic style laboratory buildings create a strong visual impression at the termination of 4th Street. The pair of dissimilar but architecturally compatible, Colonial Revival style employee's residences located across the street from the laboratory are important examples of the late-1930's residential design. All of these buildings, constructed with government funding, gain particular architectural standing in the community because they exhibit higher than average design sophistication, craftsmanship and use of materials. Attention to landscaping and setbacks affords a sense of continuity with the residential character of the surrounding neighborhood. The tree-lined boulevards of 4th Street continue through the district and foundation plantings of various species of juniper promote a feeling of cohesiveness within this small collection of buildings.

Rocky Mountain Spotted Fever Research: 1901-1940

With the coming of white settlers to the Bitterroot Valley in the late 19th Century, a disease called "spotted fever" or "black measles" began to appear each spring and early summer. People blamed it on drinking water from melting mountain snow; some thought the causative agent would be found in the sawdust piles of the Anaconda Copper Mining Co. lumber mills. About 80% of the diagnosed spotted fever cases in adults were fatal.

In 1901, people of the Bitterroot Valley appealed to the state for help in controlling the disease. It was not until 1906 that Dr. H.T. Ricketts, working for the State Board of Health, successfully induced Rocky Mountain spotted fever in an experimental animal and showed that ticks, allowed to feed on a sick animal, could transmit the disease to a well one. Dr. Ricketts, who died of typhus at an early age, was honored for his pioneering work by the naming of a group or organisms -- rickettsiae -- that caused spotted fever and other

rickettsial diseases throughout the world.

Early efforts to curtail spotted fever outbreaks focused on tick eradication, and the State Board of Health set up tick-control districts. However, the encroachment of ticks from the canyons of the west side of the Bitterroot Mountains continued. After ten years of partially successful attempts to control tick populations, it was clear that a new approach was necessary. The number of cases occurring outside tick-control districts of the valley had increased sharply and death of a prominent couple in Lolo, Montana from the disease received national attention. Solution to the problem involved a major research effort. Assistance was requested from the federal government by the State Board of Health and various civic organizations.

In 1921, the U.S. Public Health Service agreed to fund and conduct a spotted fever research program to complement the state tick control operations. Dr. Ralph R. Parker, who had been in charge of control activities at the State Board of Health was transferred to the Public Health Service in September, 1921. The Service rented the abandoned Canyon Creek schoolhouse west of Hamilton from the Hamilton School District for $15.00 per month and, with the help of community and Red Cross donations, remodeled it into a rudimentary laboratory. In March 1922, Dr. Roscoe R. Spencer, a Public Health Service officer, was detailed to take charge of the research program. By 1924, Spencer and Parker together successfully developed an effective spotted fever vaccine, prepared by emulsifying infected ticks in phenol to inactivate the spotted fever organism. The experimental product protected guinea pigs, rabbits and monkeys against the disease challenge without ill affects. Spencer was the first human to receive the material.

Preparation of the vaccine involved large-scale rearing of infected ticks and feeding them on large numbers of susceptible guinea pigs and rabbits. Although Rocky Mountain spotted fever was initially recognized only in the Bitterroot Valley and along the Snake River in southern Idaho, the disease was soon diagnosed in all of the Rocky Mountain states, and demand for vaccine "snowballed." The school house laboratory was inadequate to handle the increased requests for vaccine.

More critical to the decision to build a new facility were the hazardous working conditions at the school house lab, which resulted in the occurrence of either spotted fever or tularemia, another tick-borne disease, in 11 of the lab's 16 employees during the first five years of its operation. Two of these persons died from laboratory-acquired spotted fever.

In March, 1927, the Montana State legislature authorized the expenditure of $60,000 to construct a new laboratory in Hamilton explicitly for the study and control of Rocky Mountain spotted fever. Ground was broken in the spring on land donated by the citizens of Hamilton through the Chamber of Commerce for the new

building, which was designed principally for the preparation of the preventative vaccine.

Opposition to the construction of the new laboratory surfaced during the summer of 1927 when suit was brought against the state by some residents of the Pine Grove Addition on the basis that location of the lab would have an adverse affect on property values of the area. A hearing was held in late July and the judge ruled against the plaintiffs. Although there was no further organized opposition to the new laboratory, the incident emphasized the need for extreme precautions in developing adequate containment measures in construction and operation of the new facility.

When the new, three-story, brick laboratory (Building #1) was completed in May, 1928, vaccine production was restricted to the upper floor, and employee access to this area was limited, with strict rules for entering, working in, and leaving the infected areas. Corners of the rooms were rounded to eliminated recesses that could harbor ticks. A chain-link fence was constructed around the laboratory grounds to prevent access by "rodents and small boys." While containment measures were generally effective in preventing the spread of infection to the surrounding residential areas, it was found that ticks were escaping underneath unsealed windows, and the ventilation system sometimes exhaled immature ticks. Consequently, the yard immediately surrounding the laboratory had to be monitored by flagging the grounds for ticks with large flannel cloths. These problems were solved, and no cases of spotted fever in the community were ascribed to laboratory origin.

In addition to vaccine production, numerous other research projects were undertaken at the Rocky Mountain Laboratory, including investigations of biological controls of the tick vector using parasitic flies imported from Africa. In the process of these studies, which proved unsuccessful, Drs. Glen M. Kohls and Robert A. Cooley developed a tick collection at the laboratory that became internationally renown. Significant research into other insect-borne diseases such as tick paralysis, mosquito-borne encephalitis, Australian Q fever, and even bubonic plague was conducted at the lab during the 1930's. Mentors for numerous scientists visited the laboratory to learn about tick vectors of disease for application in their respective areas of the world.

Rocky Mountain spotted fever was diagnosed for the first time in the eastern United States in 1930. Because the spotted fever tick-tissue vaccines produced at the Hamilton laboratory proved protective, the work at the Hamilton lab no longer served simply a Montana-Idaho function. It was now clear that the research and control of spotted fever was a national responsibility. By 1930, there were 24 permanent and a number of temporary employees either on the state or Public Heath Service payroll. With the establishment of the National Institute of Health in May of that year, lobbying began in an effort to secure transfer of the Hamilton laboratory to the federal government, which occurred in

February, 1931. The purchase price for the physical plant and equipment was $68,757.

The 1930's were years of expansion for the programs, personnel and the physical plant of the Hamilton laboratory, with particular emphasis placed on stepped-up production of the spotted fever tick-tissue vaccine. Request for vaccine were received from all parts of the country, from both private practitioners and governmental agencies, such as the Forest Service and Civilian Conservation Corps. The peak production year was 1939, when 756 liters of vaccine, sufficient to inoculate 120,000-130,000 persons, were manufactured.

Production quantities this large presented difficult logistical problems. Stocks of 1 to 1 1/2 million infected ticks were reared and maintained in the laboratory, requiring 4,000-6,000 rabbits and 28,000-30,000 guinea pigs, which served as hosts or for testing. The Walsh Act, which transferred the laboratory to the Public Health Service, also provided $150,000 for construction of a new addition to the complex (Building #2). Vaccine preparation was moved to the third floor of this building and containment measures were further improved.

Additional animal space was needed and in November 1935, a Public Buildings Fund allotment of $132,000 became available for construction of a third building (Building #4), a two-story, masonry block added to the back of Building #2 and intended for animal quarters, stock room space and a garage. Construction of this building, two houses for employees and a garage (#8, #9 and #10) on newly purchased land on the east side of 4th Street was begun in the spring of 1936 and completed by June, 1937.

Even before Building #4 was completed, further expansion was contemplated. More space was needed for laboratories, animals under experimental use, a central heating plant, and cabinet shop. The federal government acquired 26.5 acres of vacant land to the west and north of the lab to provide for this expansion, as well as to serve as a buffer zone between the lab and the adjacent Jefferson School and residential areas. These long range plans were realized in August, 1938, when $215,000 was alloted from the Public Buildings Fund, augmented by another $407,000 from the Public Works Administration. Construction began in December, 1938 and the new buildings (#3, #5, #6, and #7) were ready for occupancy in June, 1940.

This ended the period of rapid expansion, although in later years a small animal-rearing facility, a sheet metal shop, an insect-infected animal building, and a state-of-the-art incinerator were added to the physical plant. These later buildings are not included within the boundaries of this nomination.

An important advancement in tissue culture methods, which proved of considerable significance to the fields of both rickettsiology and virology, occurred in 1938 when Dr. Herald R. Cox, a young bacteriologist from the

Rockefeller Institute in New York City who had transferred to the Rocky Mountain Laboratory, discovered that spotted fever, typhus and Q fever rickettsiae could be grown in yolk sacs of embryonated chicken eggs. By 1940, it was evident that potent vaccines could be prepared from the infected embryonated eggs and, in short order, the rearing of large numbers of infected ticks at the Rocky Mountain Laboratory was curtailed. The last vaccine of tick-tissue derivation was prepared at the laboratory in 1948.

The importance of the Rocky Mountain spotted fever as a national health problem markedly deceased during the later 1940's for reasons not entirely understood. The need for the vaccination was diminished by the landmark discovery after World War II that newly developed broad-spectrum antibiotics, viz., chloramphenicol and chlortetracycline, were spectacularly effective in the treatment of spotted fever and other rickettsial diseases.

Rocky Mountain Laboratory during World War II

With the advent of the Second World War, demand for typhus, yellow fever, and to a lesser extent, spotted fever vaccines rose exponentially. Louse-borne typhus had been a scourge of war-ravaged areas of eastern Europe during the First World War, and large, new outbreaks were anticipated. The U.S. Public Health Service was placed on wartime footing in 1940, and the Rocky Mountain Laboratory was directed to prepare for the production of typhus and yellow fever vaccines. The contributions of the Hamilton research facility were of such critical importance to the war effort that the Rocky Mountain Laboratory attains exceptional significance within a national context during this period.

Production of typhus vaccine using the Cox method became a large scale effort at the Rocky Mountain Laboratory, and nearly 500,000 doses were prepared in Hamilton for military use in 1942. The yellow fever unit was established at the lab in 1940 and immediately after Pearl Harbor in December, 1941, substantial renovation of the second floor of Building #4, costing the Defense Public Works Agency $454,682, was completed. Experiments to test various diluents that would maintain the viability of vaccine viruses in place of human serum were successfully undertaken. The virus was incorporated in distilled water, desiccated and shipped to military installations for the inoculation of troops detailed to North Africa. By August 1942, production of yellow fever vaccine at the Rocky Mountain Laboratory had been stepped up to 400,000 doses per month. The only other laboratory producing yellow fever vaccine at that time was the Rockefeller Institute, which used human serum as the stabilizing agent. It was later discovered that numerous cases of serum hepatitis found among U.S. soldiers in North Africa derived from contaminated batches of the Rockefeller Institutes's vaccine. No cases of hepatitis resulted from the Rocky Mountain Lab's vaccine, and, in 1945, a peak production of 3,360,000 doses were distributed. After the war, production of both typhus and yellow fever vaccines was taken over by commercial firms.

During the war, the staff of the Rocky Mountain Laboratory was reduced to a skeletal force involved with those disease problems pertinent to military activities. Scientists and technicians from the lab were dispatched to various military field hospitals and laboratories for the duration of the conflict.

After the disruption engendered by the Second World War, the expertise of the varied scientific disciplines were focussed as never before on infectious disease problems. New personnel were added to the staff of the Rocky Mountain Laboratory and significant research on a wide spectrum of insect-borne viral diseases was undertaken. However, the era of spotted fever research was drawing to a close.

Major post-war changes occurring in the U.S. Public Heath Service directly affected the future course of research at the Rocky Mountain Laboratory. Congress created the Communicable Disease Center (CDC) in 1945, which was headquartered in Atlanta, Georgia. The CDC was given the responsibility for applied research of infectious disease outbreaks in the United States, a role that the Rocky Mountain Laboratory had performed over the years in the Rocky Mountain states. Furthermore, the National Institute of Health was directed to confine its energies to basic research of disease and related phenomena. In 1948, the National Microbiological Institute was created by Congress as one of several new components comprising an expanded National Institutes of Health. The Rocky Mountain laboratory became the largest constituent laboratory of the new Institute, whose mission involved basic research of infectious diseases, and which was headquartered in Bethesda, Maryland. Subsequent research at the Rocky Mountain Laboratory centered more on fundamental questions of the structure and function of infectious agent-host reactions, a concept that was to develop with increasing clarity over the next forty years.

The final end of the pioneer era when spotted fever research was the focus of the Rocky Mountain Laboratory came when Dr. Ralph Robinson Parker died at his desk on September 4, 1949. He, more than any other person, had been instrumental in establishing the Rocky Mountain Laboratory as a durable institution at the forefront of scientific research in the country.

BOUNDARY DESCRIPTION AND JUSTIFICATION:

The land area included within the Rocky Mountain Laboratory Historic District is described as follows:

Lots 1-9 of block 18 and lots 1-7 of block 19 of the Pine Grove Addition to the City of Hamilton, Montana.

This boundary is drawn to include only the historic buildings that today exist as part of the laboratory complex. During the 196Ø's, the Rocky Mountain lab underwent a major expansion and the numerous buildings and structures from that period located directly to the west of the historic district are excluded from the nomination boundaries.

ACREAGE: approximately 6

UTM REFERENCES: I(1) 11/719200/5124220
J(1) 11/719200/4124040
K(1) 11/719050/5124020
L(1) 11/719040/5124220

U.S.G.S. QUAD: Hamilton South, Montana

ROCKY MOUNTAIN LABORATORY HISTORIC DISTRICT

BUILDING #	ADDRESS	DATE	STYLE	STATUS
Building #1	903 S. 4th	1927	Collegiate Gothic	primary
Building #2	"	1932-34	Collegiate Gothic	primary
Building #3	"	1938	Collegiate Gothic	primary
Building #4	"	1936-37	Moderne	contributing
Building #5	"	1938-40	Moderne	contributing
Building #6	"	1938-40	Moderne	contributing
Building #7	"	1938-40	Moderne	contributing
Building #8	906 S. 4th	1936-37	late Colonial Revival	primary
Building #9	908 S. 4th	1936-37	late Colonial Revival	primary
Building #10	"	1936-37	Double Garage	contributing

ROCKY MOUNTAIN LABORATORY
HISTORIC DISTRICT

Hamilton MRA