

RIVER CORRIDOR INTEGRATED LAND PLANNING DOCUMENT

Prepared for the U.S. Department of Energy



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River Corridor Integrated Land Planning Document

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EXECUTIVE SUMMARY

This document describes the current state of Hanford Site lands, including considerations and constraints associated with future public and tribal access and use of remediated land in the 220-square miles of the Columbia River Corridor portion of the Hanford Site. The U.S. Department of Energy (DOE), Richland Operations Office (RL) is working with the U.S. Fish and Wildlife Service (USFWS) to provide opportunities for stakeholders, the public, community members, the tribes and others to provide input on future Hanford land uses.

In 1999, after an extensive public process, DOE made decisions about how Hanford Site land could be used as cleanup from the Site's plutonium production mission is completed. Those decisions are provided in the *Final Hanford Comprehensive Land-Use Plan¹ Environmental Impact Statement* [HCP EIS (DOE/EIS-0222-F)²] Record of Decision (ROD)³. With the cleanup progress that has been made along Hanford's River Corridor over the ensuing 15 years, opportunities for reuse of Hanford Site land are being realized. This document begins the process of planning for the next steps by inventorying the land-planning constraints for the River Corridor lands and identifying more specific land-use decisions in the Hanford comprehensive land-use plan (CLUP).

The CLUP policies, recreational facility development and other future land uses in the River Corridor are influenced by a number of land-planning considerations that constrain the River Corridor lands. These planning constraints include CLUP land-use designations, the Hanford Reach National Monument (HRNM), the Manhattan Project National Historical Park, ecological and cultural resources, DOE environmental and safety programs, real estate encumbrances, post-cleanup institutional controls, and infrastructure.

Current constraints impede or prevent the ability to establish uncontrolled public and tribal access to the lands along the Columbia River. Security controls and environmental permits related to DOE's ongoing cleanup mission will need to be modified to maintain compliance with the associated requirements. Several actions have been defined ranging from administrative and programmatic changes to actual physical changes. These actions include revisions to Hanford's Air Operating Permit⁴ and *Radioactive Air Emissions License* (FF-01⁵), along with administrative changes to various security programs that regulate the current controlled-access areas.

¹DOE/EIS-0222-F, 1999, *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement*, U.S. Department of Energy, Washington, D.C.

²The CLUP was reaffirmed in two Supplement Analyses to the HCP-EIS (DOE/EIS-0222-SA-01; June 2008, and DOE/EIS-0222-SA-02; April 2015) and amended ROD (73 FR 55824; September 26, 2008).

³64 FR 61615, 1999, "Record of Decision: Hanford Comprehensive Land-Use Plan Environmental Impact Statement (HCP EIS)," *Federal Register*, Vol. 64, No. 218, pp. 61615-61625, November 12, 1999.

⁴00-05-06, 2013, *Hanford Site Air Operating Permit, Renewal 2*, Washington State Department of Ecology, Olympia, Washington.

⁵FF-01, 2014, *Radioactive Air Emissions License* for the Department of Energy Richland Office – Hanford Site, Issued by the State of Washington Department of Health, Olympia, Washington.

Security controls are necessary in order to release those lands from radiological controls before allowing uncontrolled public and tribal access in areas of the River Corridor. Physical security controls include installing fencing, gates, and signage to provide demarcation between potential future public access areas and DOE's remaining operational areas. Although modifications to the River Corridor would facilitate uncontrolled public and tribal access to the River Corridor, they do not authorize this access.

The overall goal of restoring access to Hanford Site lands, along with factors being considered, is detailed in Figure ES-1.



Figure ES-1. Hanford Site Future Access and Use.

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TERMS

ASIL	acceptable source impact level
BPA	Bonneville Power Administration
BRMP	<i>Hanford Site Biological Resources Management Plan</i>
CCP	<i>Hanford Reach National Monument Comprehensive Conservation Plan and Environmental Impact Statement</i>
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
CFR	<i>Code of Federal Regulations</i>
CGS	Columbia Generating Station
CHPRC	CH2M HILL Plateau Remediation Company
CLUP	comprehensive land-use plan
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
District	Cold War Era Historic District
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
EPZ	Emergency Planning Zone
EUZ	exclusive-use zone
HCP EIS	<i>Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement</i>
HCRMP	<i>Hanford Cultural Resources Management Plan</i>
HRNM	Hanford Reach National Monument
HTSD	<i>Hanford Sitewide Transportation Safety Document</i>
IC	institutional control
ILP	River Corridor Integrated Land Planning Document
IT	information technology
LIGO	Laser Interferometer Gravitational Wave Observatory
MEI	maximally exposed individual
NDAA	<i>National Defense Authorization Act of 2015</i>
NEPA	<i>National Environmental Policy Act of 1969</i>
NOC	notice of construction
NPS	National Park Service
NRC	U.S. Nuclear Regulatory Commission
NRDA	natural resource damage assessment
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
Register	National Register of Historic Places
RL	U.S. Department of Energy, Richland Operations Office
ROD	record of decision
SPAB	Site Planning Advisory Board

SR	State Route
TAP	toxic air pollutant
TED	total effective dose
TEDE	total effective dose equivalent
Tri-Party Agreement	<i>Hanford Federal Facility Agreement and Consent Order</i>
USFWS	U.S. Fish and Wildlife Service
WAC	<i>Washington Administrative Code</i>
WDFW	Washington Department of Fish and Wildlife
WRPS	Washington River Protection Solutions LLC
WTP	Waste Treatment and Immobilization Plant

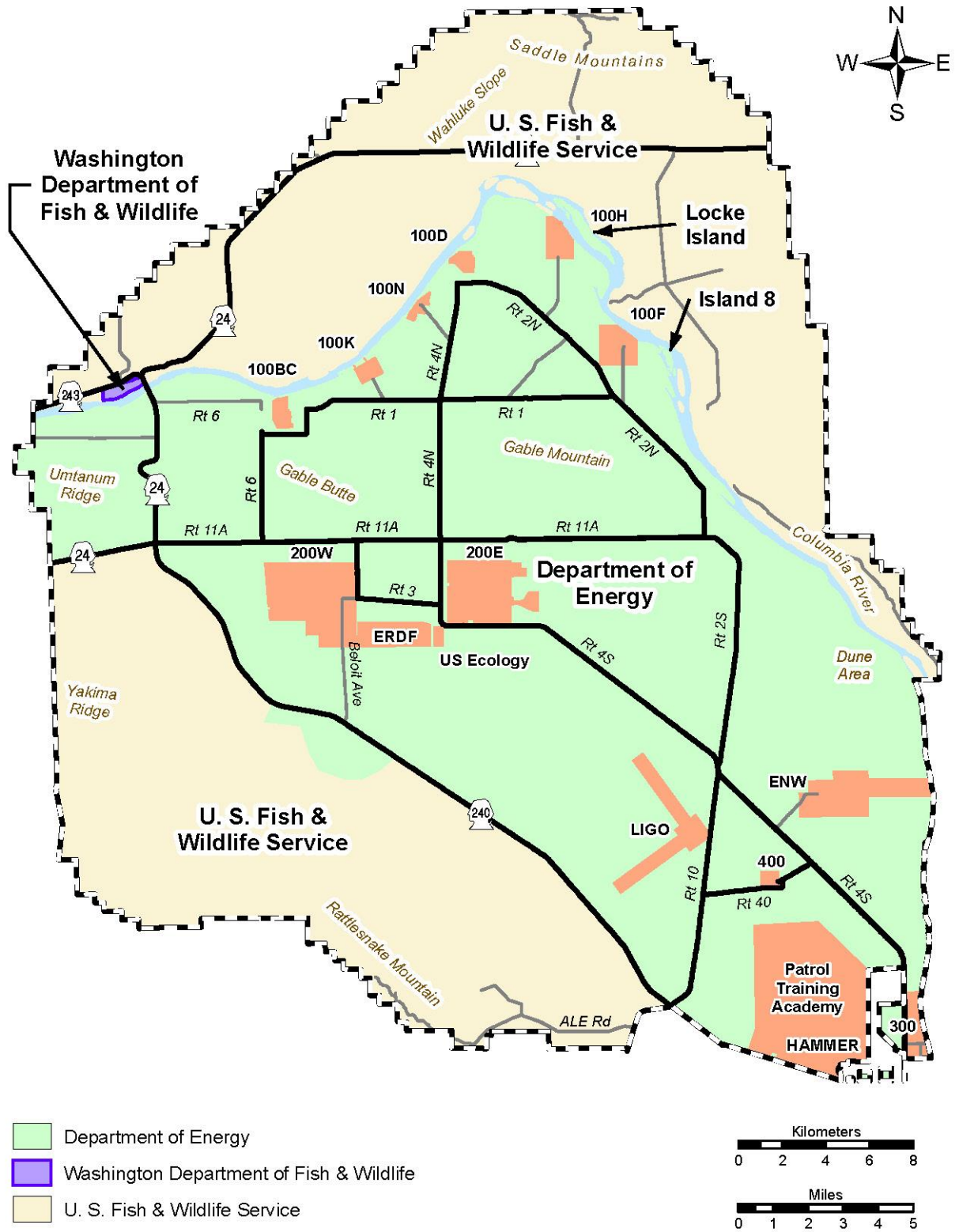
1.0 INTRODUCTION AND BACKGROUND

One of the nation's largest and most complex environmental cleanup projects is underway at the U.S. Department of Energy's (DOE) Hanford Site located in southeastern Washington State. Hanford is a 586-mi² (366,000-acre) site that was established in 1943 as part of the Manhattan Project, a top-secret American research and development effort to produce the first atomic bomb. Plutonium production facilities continued operating at Hanford beyond World War II and through the Cold War. In 1989, DOE stopped producing plutonium and began cleaning up facilities, lands, and groundwater contaminated with hazardous materials, including radionuclides and chemical waste.

The DOE-Office of Environmental Management manages the Hanford Site under the statutory authority of the *Atomic Energy Act of 1954* and in accordance with a host of public laws, regulations, and DOE orders. Environmental cleanup decisions and activities are conducted primarily under two federal laws: 1) The *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA); and 2) the *Resource Conservation and Recovery Act of 1976* (RCRA). Cleanup efforts are regulated by the U.S. Environmental Protection Agency (EPA) and the Washington State Department of Ecology (Ecology) under the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement). DOE manages Hanford's lands in accordance with Federal Property Management regulations under the framework of DOE/EIS-0222-F, *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement* (HCP EIS).

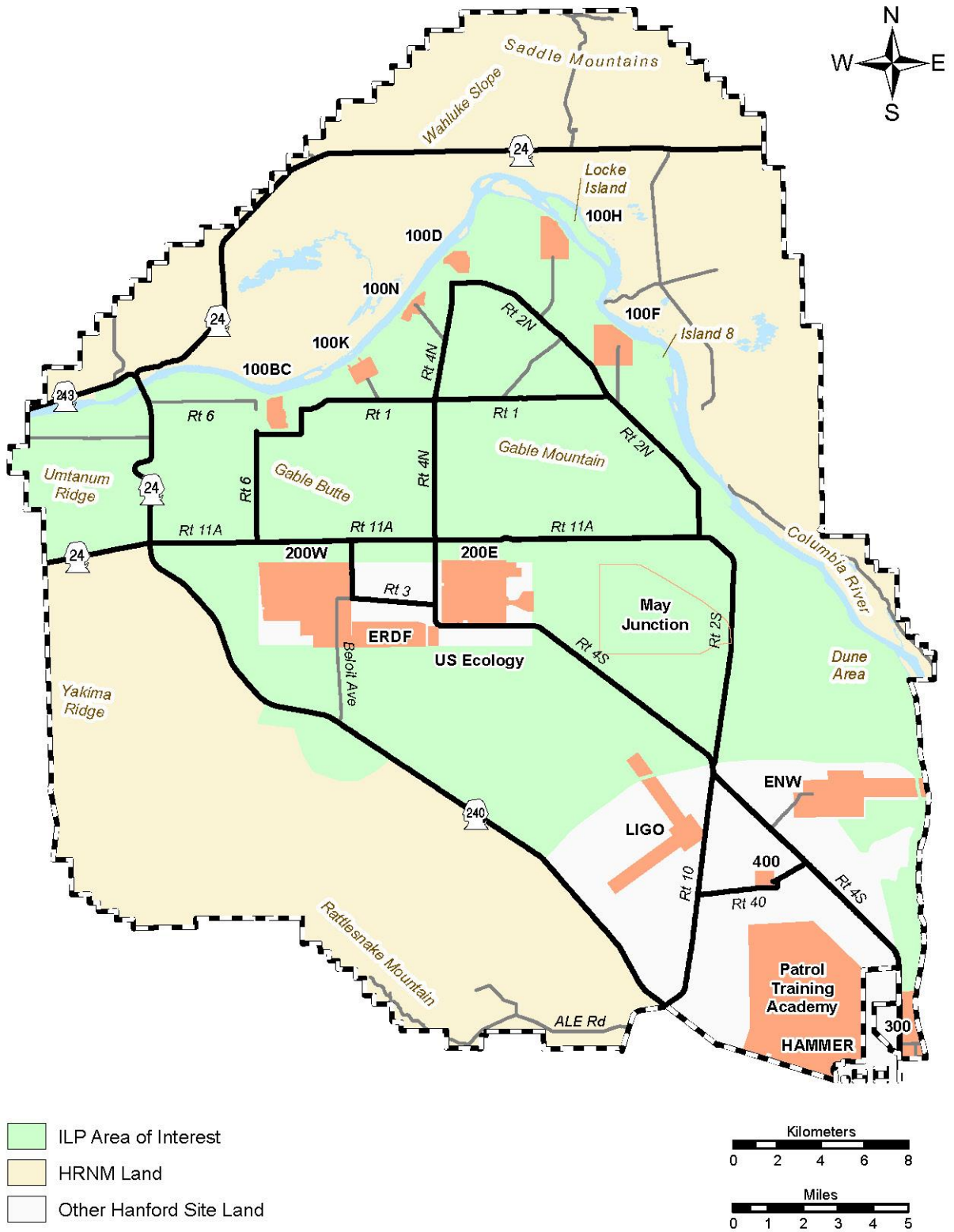
Significant progress is being made toward achieving the Tri-Party Agreement cleanup goals for the operational areas surrounding the Hanford Site's Central Plateau and more detailed planning can begin to facilitate the future land uses established by the comprehensive land-use plan (CLUP) to support public and tribal access⁶. This planning begins with understanding the various land-planning constraints that affect the 220-square-mile area along the Columbia River, known as the River Corridor and a recognition of where constraints currently prohibit public access. The geographic scope of the *River Corridor Integrated Land Planning Document* (ILP) is defined first by those lands on the Hanford Site that are managed by DOE, as shown in Figure 1. The balance of lands are managed by the U.S. Fish and Wildlife Service (USFWS) and the Washington Department of Fish and Wildlife (WDFW) under permit by DOE. The land-use designations in the CLUP narrow the scope further to include only those lands set aside for preservation, conservation, and recreation. For continuity, the 4,700 acres of industrial area at May Junction also is included in Figure 2. As such, the geographic area of interest in the scope of the IPL covers 145,000 acres surrounding the Central Plateau and includes portions of the Hanford Reach National Monument (HRNM) River Corridor and the McGee Ranch/Riverlands area. The boundaries also encompass Locke Island and Island 8 in the Columbia River. The ILP area of interest is shown in Figure 2.

⁶ "Public access," as used in this document, is assumed to mean uncontrolled access for members of the public and tribal members unless otherwise noted.



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Figure 1. Land Management Areas by Agency.



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Figure 2. ILP Area of Interest.

2.0 PURPOSE AND OBJECTIVES

This document describes various land-planning constraints that will affect land uses and public and tribal access for the River Corridor lands, ensuring that land-use decisions are consistent with CLUP land-use designations and policies, and are within the constraints of the ongoing DOE cleanup mission.

The ILP is consistent with laws, regulations, agency policies, and existing planning documents (e.g., DOE/RL-96-32, *Hanford Site Biological Resources Management Plan* [BRMP], and DOE/RL-98-10, *Hanford Cultural Resources Management Plan* [HCRMP]) and includes the following objectives:

- Describes various land-planning considerations for future land uses within the River Corridor (Section 3.0).
- Describes cultural resources in the River Corridor and protected areas of cultural significance (Sections 3.5 and 3.6).
- Describes the emergency preparedness considerations for notifying and evacuating the transient population and areas where public and tribal access may be authorized (Section 3.9).
- Proposes boundaries between controlled areas associated with the ongoing cleanup mission the Central Plateau and general access areas in the River Corridor that are designed for future recreational activities and tribal use (Section 4.0).

This document does not address the specific land uses within the River Corridor that may be implemented to meet the final land-use pattern defined by the CLUP. Specific land uses consistent with the CLUP may be developed as a next step in the land management process for these lands and documented in another document, the River Corridor Area Management Plan.

3.0 RIVER CORRIDOR LAND PLANNING CONSTRAINTS

Under the requirements of the *National Environmental Policy Act of 1969* (NEPA), the HCP EIS was approved to establish a CLUP for the Hanford Site for at least the next 50 years. The CLUP includes a final land-use map depicting the desired future patterns of land use on the Hanford Site. Within the River Corridor, the land-use patterns are significantly influenced by the conservation and preservation of ecological and cultural resources. These patterns are balanced with land uses that include traditional tribal activities and public recreational activities along the Columbia River.

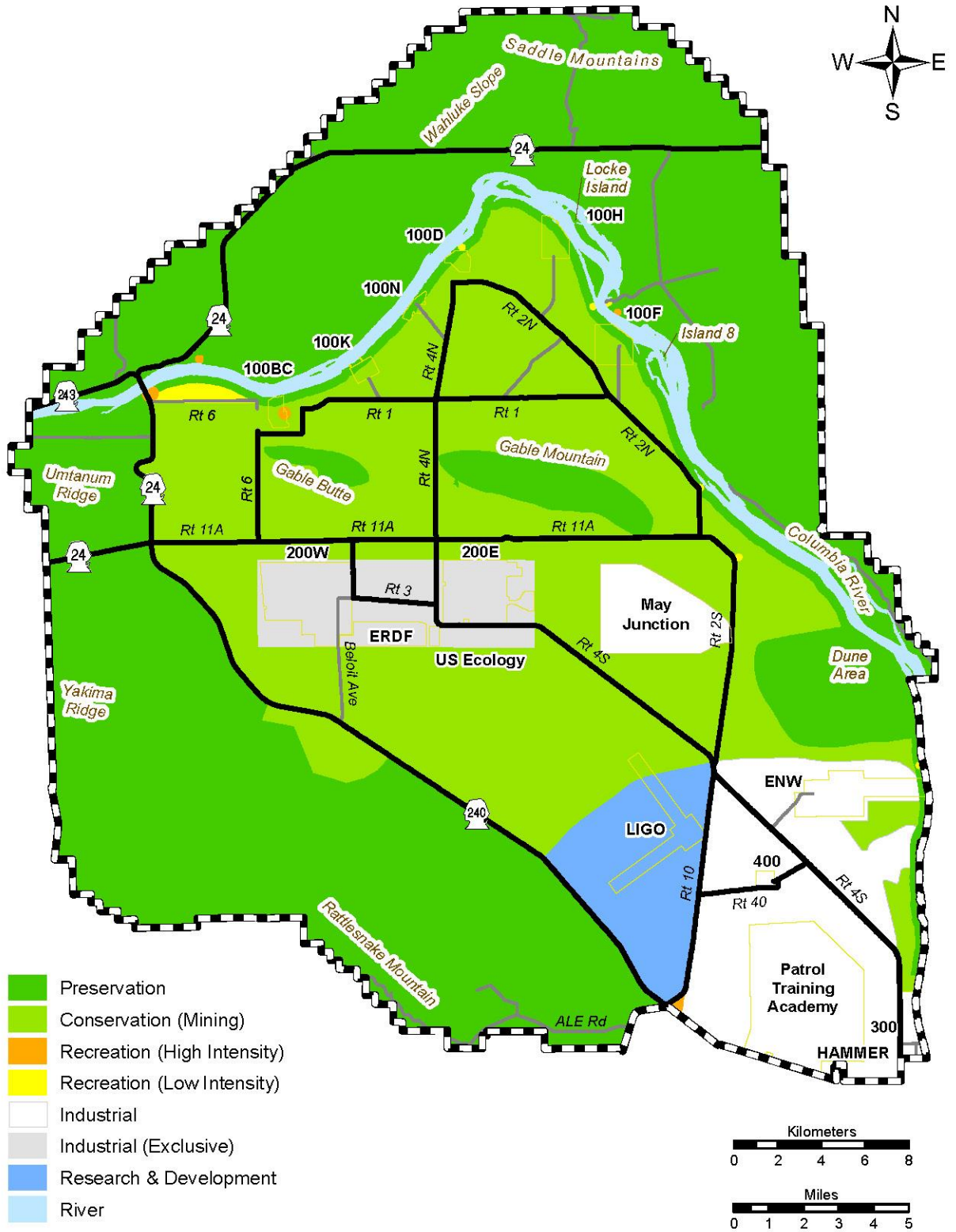
To achieve the future land-use patterns in the River Corridor, land-use decisions will be made by evaluating a variety of factors that constrain potential land uses. When defining the set of constraints that apply to land-use decisions, DOE is assumed to retain ownership of the lands for the foreseeable future. These constraints include the following:

- CLUP designations
- HRNM
- Manhattan Project National Historical Park
- Ecological resources
- Cultural resources
- Areas sacred to the Tribal Nations
- Natural Resource Damage Assessment
- Nuclear facility safety
- Emergency management
- Hazardous waste transportation
- Security
- RCRA/CERCLA security requirements and institutional controls
- Environmental air permitting
- Radiological controls
- Realty agreements/encumbrances
- Site infrastructure
- Mining.

The following sections describe the existing environment supporting the land-use decision process.

3.1 CLUP LAND-USE DESIGNATIONS

The five key land-use designations (Figure 3) in the River Corridor are: 1) Preservation; 2) Conservation (Mining); 3) Low-Intensity Recreation; 4) High-Intensity Recreation; and 5) Industrial. A majority of the River Corridor is designated for preservation or conservation to meet the CLUP policy to “protect and preserve the natural and cultural resources of the Site for the enjoyment, education, study, and use of future generations.” The industrial area (May Junction) is set aside for future DOE missions or economic development. DOE has no current plans to use this area and it remains in a conservation status.



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Figure 3. CLUP Land-Use Designations.

Within the areas designated for conservation and preservation, the CLUP defines both low-intensity and high-intensity recreational activities and their locations along the River Corridor, as shown in Figure 3. Recreational activities include escorted tours of the historic B Reactor, hiking trails, biking, boating access to the Columbia River, and visitor-serving facilities. Implicit in these areas, as defined by CLUP policies, treaties with American Indian Tribes will be honored as they relate to land uses and resource uses. Mining is allowed in the areas designated for conservation; however, mining is permitted only to support government missions or further the biological function of wetlands. All future land uses within the River Corridor must be consistent with these land-use designations.

As prescribed by the CLUP, a Site Planning Advisory Board (SPAB), consisting of representatives from DOE, the cooperating agencies with land-use authority, and the affected tribes shall be formed to evaluate and make recommendations on development proposals and land-use requests. It is anticipated that some requested activities will be permitted under the plan, but that others will need to be modified or required to incorporate mitigation to reduce potential impacts. To date the SPAB has not been established by DOE.

3.2 HANFORD REACH NATIONAL MONUMENT

Presidential Proclamation 7319 of 2000 established the HRNM for the purposes of conserving a “unique and biologically diverse landscape, encompassing an array of scientific and historic objects.” The proclamation describes the increasingly scarce objects of scientific and historic interest of the Hanford Site, including the shrub-steppe ecosystem, the Hanford Reach of the Columbia River, the wealth of uncommon native plant and animal species, the rich archaeological and historic record, and other values of national significance.

In June 2000, the HRNM was established by Presidential proclamation for the preservation of nationally significant natural, cultural, and scientific resources. The proclamation recognizes that Native American groups have cultural ties to the monument: “Hundreds of prehistoric archaeological sites have been recorded, including the remains of pithouses, graves, spirit quest monuments, hunting camps, game drive complexes, quarries and hunting and kill sites” are contained within the monument. Nothing in the proclamation shall enlarge or diminish the Treaty of 1855 language of any Indian Tribe.

The proclamation directs the USFWS to manage the HRNM under existing agreements with DOE, and directs DOE to manage the lands within the monument not subject to management agreements with USFWS, and to consult with the Secretary of the Interior in developing any management plans and rules and regulations governing portions of the monument for which DOE has management responsibility.

DOE manages approximately 30,000 acres of the HRNM under the guidelines of Presidential Proclamation 7319 and the CLUP. The USFWS oversees 165,000 acres of the HRNM under a DOE permit and memorandum of understanding, guidelines of the Proclamation and the *Hanford Reach National Monument Comprehensive Conservation Plan and Environmental Impact Statement* (CCP) (USFWS 2008). The CCP, developed and approved through the NEPA process, is consistent with DOE’s CLUP, with a focus on management goals, objectives, and actions aimed at fulfilling the purposes of the monument under the authority of the *National Wildlife Refuge System Administration Act of 1966*.

The WDFW, under DOE permit, manages approximately 800 acres of monument land northwest of Vernita Bridge to provide public fishing and boat launching.

3.3 MANHATTAN PROJECT NATIONAL HISTORICAL PARK

In December 2014, as part of the *National Defense Authorization Act of 2015* (NDAA), Congress passed legislation authorizing the creation of the Manhattan Project National Historical Park at Oak Ridge, Tennessee; Los Alamos, New Mexico; and at the Hanford Site in the state Washington. The legislation required the Secretary of Energy and Secretary of Interior to sign a Memorandum of Agreement (MOA) within one year to outline roles and responsibilities and determine which of the eligible historic facilities would be included in the park at each of the three locations. A joint DOE-Headquarters (HQ)/Field team worked extensively with a National Park Service (NPS) HQ/Regional team to negotiate an MOA, make recommendations on which facilities should be in the park, and to propose boundaries for the park sites. The MOA was signed by Energy Secretary Ernest Moniz and Secretary of the Interior Sally Jewell on November 10, 2015, officially creating the new Park, which will be jointly managed by DOE and NPS.

Consistent with the authorizing legislation, DOE's obligations under the MOA are to preserve and protect all historic resources, elements and landscapes associated with the Manhattan Project National Historical Park narrative, and to expand public access to those areas. The NPS is responsible for interpreting the Manhattan Project and providing all visitor services associated with the Park. At the Hanford Site, the facilities included in the Manhattan Project National Historical Park are the B Reactor National Historic Landmark, the Bruggemann Warehouse, the 1908 Hanford Irrigation District (Allard) Pump House, the White Bluffs Bank, and Hanford High School (including a portion of the co-located Hanford Construction Camp). Several of these facilities are immediately adjacent to and/or partially within the HRNM. Per the MOA, DOE also is required to maintain and preserve historic elements associated with the Park facilities and interpretive themes as if they were within the Park boundaries.

3.4 ECOLOGICAL RESOURCES

Ecological resource stewardship is an integral part of DOE's responsibilities at the Hanford Site. Appropriate management strategies and actions, based on the best scientific information available, are important components of stewardship and land-use planning at the Site. The BRMP is DOE's primary implementation plan for managing biological resources under the CLUP.

The BRMP establishes DOE's management objectives, strategies, actions, and general directives for managing biological resources on the Hanford Site. The objective of the BRMP is to provide a consistent approach to protecting and managing biological resources onsite. Essential aspects of Hanford Site biological resource management include resource monitoring, impact assessment, mitigation, and restoration. The BRMP has the following overarching goals:

- Foster preservation of important biological resources
- Minimize adverse impacts to biological resources from Site development and other management activities
- Balance the Site cleanup mission with resource stewardship obligations.

3.4.1 Hanford's Biological Resources

The Hanford Site lies within the interior, low-elevation Columbia River Basin, which is within the shrub-steppe zone. The diversity of physical features across the Hanford Site contributes to a corresponding diversity of biological communities. The majority of the Hanford Site consists of shrub-steppe habitats. In addition, valuable riparian, wetland, and aquatic habitats are associated with the Hanford Reach of the Columbia River. The Hanford Site also contains rarer terrestrial habitats such as riverine islands, bluffs and cliffs, basalt outcrops, and sand dunes. Both shrub-steppe and riparian habitats are considered "priority habitats" by the WDFW. Washington's Natural Heritage Program mapped and classified portions of the native plant communities found on the Hanford Site as priority ecosystems.

The Hanford Site is home to at least 46 species of mammals, 10 species of reptiles, 5 species of amphibians, more than 200 species of birds, and many more than 1,000 species of insects and invertebrates, and approximately 700 species of plants. There have been 46 fish species identified in the Hanford Reach, as well as numerous insect, crayfish, and mollusk species. Many of these species are considered to be rare or of special concern to federal or state resource management agencies.

The Columbia River is designated as critical habitat for three federal endangered or threatened fish species (Upper Columbia River spring Chinook, Upper Columbia River steelhead, and bull trout). Two federal threatened terrestrial plant species (Umtanum buckwheat and White Bluffs bladderpod) grow on the Hanford Site. The greater sage grouse is currently a candidate for listing under the *Endangered Species Act of 1973* and, if the bird is listed, the Hanford Site may be an important part of efforts for its recovery. In addition to these species, the Washington Natural Heritage Program lists approximately 25 plant species as endangered, threatened, or sensitive. The WDFW lists 29 wildlife species as threatened, endangered, sensitive, or candidate. Also, approximately 23 plant species and 51 wildlife species are listed on the state monitor, review, and watch list.

The ecological resource inventory at Hanford is routinely monitored and updated to ensure the proper protection of critical ecological resources. Efforts are ongoing to update the mapping of Hanford's vegetation and evaluate additional conservation measures that might be appropriate. In FY 2016, the BRMP is expected to be updated to include this new information to support future land-use decisions.

3.4.2 Resource Management Approach and Implementation

The principal objective of BRMP is to provide strategies and management actions necessary to sustain Hanford Site biological resources. Specific resource management objectives for the Site are as follows:

- Protect species and habitats of state and federal concern
- Maintain and preserve native biological diversity
- Reduce the spread of invasive species and provide integrated control of noxious weeds
- Where and when feasible, improve degraded habitats to increase landscape connectivity and native diversity
- Reduce and minimize fragmentation of habitats

- Maintain landscapes that provide regional connectivity to habitats surrounding the Site.

3.4.3 General Directives and Practices

The following general directives and practices have been developed for managing the Site's biological resources. They apply to all actions occurring within the portions of the Site managed by DOE.

- All actions and activities that potentially affect biological resources require an ecological compliance review and determination of potential impacts before proceeding. This directive applies not only to groundbreaking disturbances and excavation, but also to any treatments or actions that alter the current natural state of the environment, habitat, or a species population, including mowing, prescribed burning, herbicide application in native vegetation, and creating excessive noise. The ecological review process should be a component of early project planning.
- If an ecological compliance review determines adverse impacts to biological resources, such as habitat alterations or disturbances that could affect the reproductive success of a species of concern, specific mitigative actions (i.e., avoidance, minimization, or compensation) will be identified and implemented by the responsible party.
- All entities on the Hanford Site will conduct activities and work in accordance with access restrictions and administrative designations, including the following:
 - Areas containing rare plant communities
 - Mitigation and restoration areas
 - Collection and propagation areas for native plant materials
 - Lands used under permit and leased properties
 - Administrative control areas for species of concern, which include bald eagle buffer zones, fall Chinook salmon spawning locations, ferruginous hawk and burrowing owl buffer zones, and known populations and occurrences of plant species of concern.
- Activities that increase habitat fragmentation and degrade existing native habitats should be avoided. New facilities should be located within previously disturbed areas; new linear infrastructure development should be co-located with existing roads or corridors.
- No vehicles are permitted off established roads on the Hanford Site unless specifically approved by the DOE-Richland Operations Office (RL) and the Hanford Fire Department unless required by an emergency situation.
- Actions that remove or significantly alter native vegetation will be required to include replanting with native species in areas not needed for ongoing operations following the practices outlined in DOE/RL-2011-116, *Hanford Site Revegetation Manual*.
- Plant material used for habitat improvements or habitat restoration should be native to the Hanford Site and should be locally derived native stock.
- Domestic grazing is not allowed on Hanford Site lands.
- Recreational hunting, fishing, or trapping is not allowed on RL-managed lands.

3.4.4 Ecological Compliance Assessment

The Hanford Site ecological compliance assessment incorporates an evaluation of potential impacts to biological resources before they occur and mitigation of adverse impacts if they do occur. This process provides an essential link between DOE's responsibility to protect biological resources and Site missions and activities. All actions with the potential to affect biological resources require an ecological compliance review.

An ecological compliance review ensures the proposed action will not affect rare plants or animals or adversely affect habitats of concern. The review requires a site-specific field survey by a qualified biologist. Records from previous surveys, maps, photos, and scientific literature also may be used.

If the proposed action will adversely affect rare species or habitats, the ecological compliance review will include provisions to mitigate these impacts as defined in the BRMP. All projects and programs are expected to comply with the requirements identified in the ecological compliance review. These requirements may include recommendations to avoid and/or minimize adverse impacts to ecological resources by performing one or more of the following actions:

- Implementing alternatives that would result in fewer adverse impacts
- Locating the project at a less ecologically sensitive site
- Reducing or modifying the project footprints
- Scheduling project activities to minimize disruption of key species and functions.

In cases when significant impacts cannot be reasonably avoided or minimized, the ecological compliance review will provide recommendations for compensatory mitigation based on the floral and faunal characteristics or the habitat that will be disturbed.

3.5 CULTURAL RESOURCES

The Hanford Site is one of the most cultural resource-rich areas in the western Columbia Plateau. It contains numerous well-preserved archaeological sites representing prehistoric, precontact, and historic periods and is thought of as homeland by many Native American people, as well as settler and homesteader families. Historic period resources include sites, buildings, and structures from the pre-Hanford Site, Manhattan Project, and Cold War eras. Sitewide management of Hanford's cultural resource follows the HCRMP (DOE/RL-98-10).

The HCRMP provides guidance and strategies for protecting the unique cultural resources specific to the Hanford Site and is updated through consultation with local Tribal Nations; interested members of the public; and local, state, and federal agencies.

The overall objective of the HCRMP is to identify, document, evaluate, protect, and preserve the fragile, nonrenewable cultural resources found on the Hanford Site. Consistent with the CLUP, all proposals and projects are to be integrated with existing DOE land-use-review procedures, including cultural, historic, and archaeological resources, as outlined in the HCRMP. The DOE procedure for cultural resources reviews applies to all federal undertakings that occur on the Hanford Site and for any activity that has the potential to affect cultural resources.

3.5.1 Hanford's Cultural Resources

The Hanford Site has more than 1,260 recorded archaeological sites, 208 are eligible for listing in 36 CFR 60, "National Register of Historic Places" (Register), and 46 are listed. Seven Archaeological Districts and Archaeological Sites are listed in the Register and four Archaeological Districts are eligible for listing in the Register. Several recorded and unrecorded Traditional Cultural Properties are also located at the Hanford Site. The number of recorded resources will increase as more land is archaeologically surveyed.

Historic properties that have been affected by Hanford's cleanup mission may have ongoing mitigation activities developed in project memoranda of agreement with the State Historic Preservation Officer and the Advisory Council on Historic Preservation.

The Hanford Site Manhattan Project and Cold War Era Historic District (District) and its associated programmatic agreement (DOE/RL-96-77) address management of 185 buildings, structures and complexes selected as contributing properties and approximately 900 buildings and structures identified as either contributing properties not selected for mitigation or as noncontributing properties of the District.

3.5.2 Resource Management Approach and Implementation

The HCRMP provides requirements and management actions necessary to protect and manage significant cultural resources and historic properties. Specific resource management objectives are as follows:

- Take into account the effects of projects on Register cultural resources and historic properties
- Manage and protect Register cultural resources
- Maintain and operate records and databases to ensure cultural resource locations and previously surveyed areas are documented and searchable.

3.5.3 General Directives and Practices and Compliance Assessment

The following directives and practices have been developed for cultural resource management for actions occurring within RL-managed portions of the Site.

- All actions and activities that have the potential to affect cultural resources require a cultural resources compliance review and determination of potential impacts before they can proceed. This directive applies to groundbreaking disturbances and excavation, and any treatments or actions that could affect a cultural resource or historic property including mowing, prescribed burning, herbicide application, and off-road driving. The cultural resources compliance review process should be a component of early project planning.
- The cultural resources compliance review is project specific and analyzes the potential effects to cultural resources for a defined project scope. The cultural resources compliance review must be conducted by a qualified archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for Archaeology. At a minimum, each review must include a well-defined project scope of work and a literature review of known historic properties, archaeological sites, traditional cultural places, historic structures, and previous cultural resources surveys. The results of this research will determine the effect each project may have on cultural resources and historic properties.

- When a cultural resources compliance review determines the presence of cultural resources within the project area that cannot be avoided, a determination of Register eligibility is completed and specific mitigations will be identified (i.e., avoidance, minimization, or project redesign) and implemented by the responsible party.
- Initiate consultation with Tribal Nations, the Washington State Historic Preservation Officer, the Advisory Council on Historic Preservation, and interested parties in accordance with the HCRMP.

3.6 CULTURAL PROTECTED AREAS

Since the Hanford Site was established, the Tribal Nations have stated that there are areas of special significance located within the Hanford Site. At Hanford, the DOE works with the Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Nez Perce Tribe, and the Wanapum Band. The role of Tribal Nations at Hanford is guided by DOE O 144.1, *Department of Energy American Indian Tribal Government Interactions and Policy*, communicating departmental, programmatic, and field responsibilities for interacting with American Indian governments. DOE O 144.1 incorporates both the policy and the consultation guidance for working with Tribal Nations at the Hanford Site and further defines cultural resources as including sacred sites that have importance to American Indian peoples. Under Executive Order No. 13007, *Indian Sacred Sites*, as federal managers of the Hanford Site, DOE should accommodate access and use, and avoid adversely affecting the physical integrity of sacred areas.

Over the last several years, RL has consulted with the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe and the Wanapum Band of Indians to identify these sacred areas. Through tribal consultation, RL will be establishing “Cultural Protected Areas.” These areas are culturally or religiously significant to an Indian Tribe or Band and may contain significant materials, objects or places. RL will develop management plans for these areas in consultation with the Tribal Nations. These plans may include information about tribal access and use, public access and use, signage, erosion control, re-vegetation and/or restoration and monitoring.

3.7 NATURAL RESOURCE DAMAGE ASSESSMENT

Under the umbrella of CERCLA, when contaminant releases are suspected to have led to “injury” of natural resources, federal law requires government officials, acting as natural resource “trustees,” to conduct a natural resource damage assessment (NRDA) process. The objective of this process is to restore, replace, or acquire the equivalent of the injured natural resources and to compensate the public for any loss of services that occurs while natural resources are in an injured state.

The U.S. Department of the Interior promulgated regulations that establish a framework and a set of procedures for conducting a NRDA. These regulations define three sequential NRDA phases:

- Pre-assessment
- Injury assessment
- Post-assessment/restoration. This phase may involve restoration in some areas of the Hanford Site.

During the post-assessment/restoration phase, the trustees prepare an assessment report and make a formal claim for damages from the responsible parties. On settlement of the claim or awarding of damages, this phase concludes by implementing a restoration plan. The objectives of this plan are to restore affected natural resources to their baseline condition and compensate the public for the interim loss of services resulting from those resources. Although most restoration projects begin during the post-assessment phase, some restoration projects may occur earlier in the NRDA process.

The Hanford Natural Resource Trustee Council may agree upon early restoration activities on Hanford, where feasible and appropriate, to accelerate site recovery. Because projects implemented under NRDA are designed to compensate for natural resource injuries, the scope may create constraints on future uses of the associated lands to ensure continued protection of the resources. It is possible that restoration projects will occur within the ILP area of interest, as well as within the HRNM and Central Plateau.

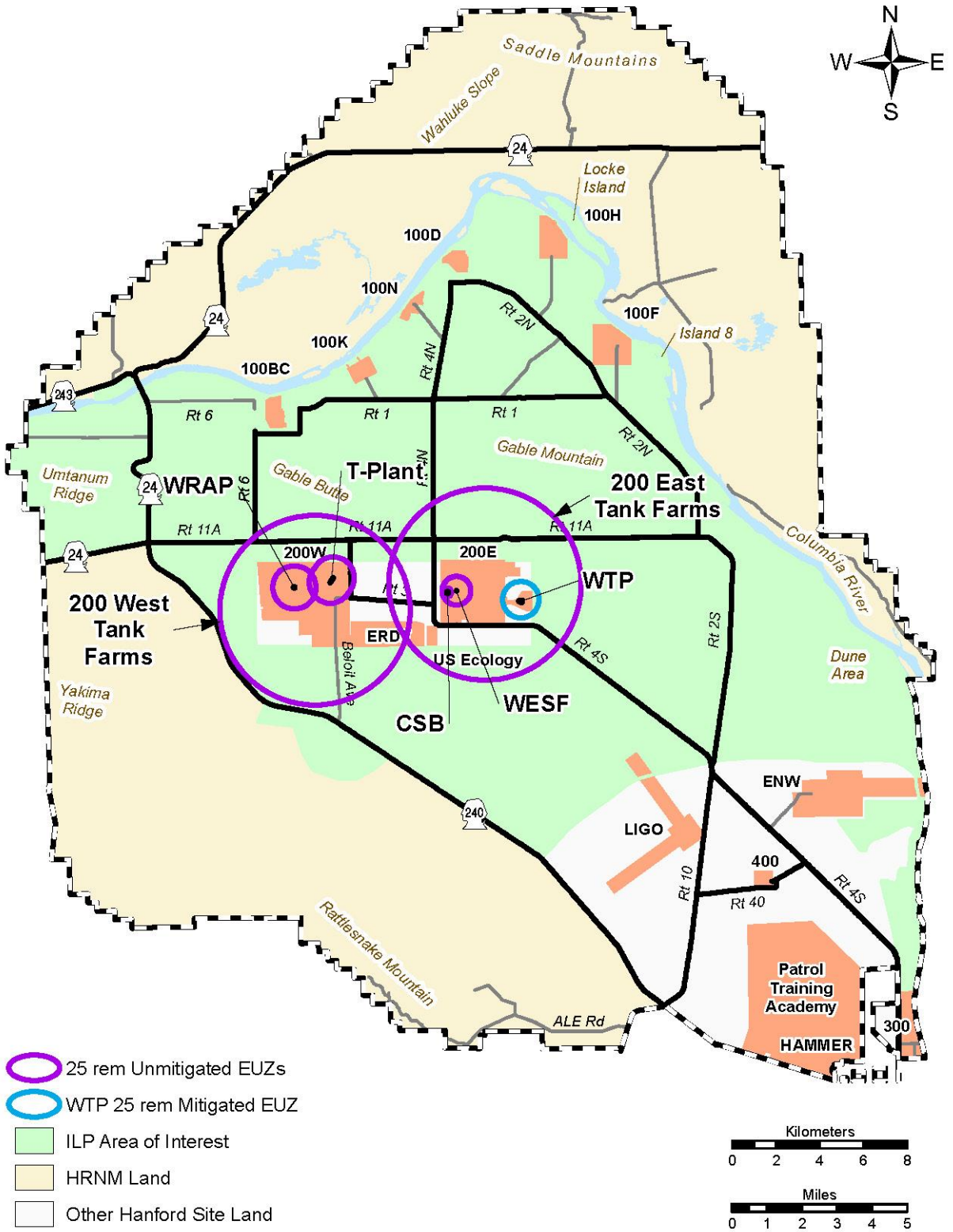
3.8 NUCLEAR FACILITY SAFETY BASES

Risks associated with handling, processing, and storing nuclear materials at the Hanford Site dictate the need for nuclear facilities to be designed, constructed, and operated to strict standards that ensure risks are prevented and/or mitigated such that the workers, public, and environment are protected. The CLUP describes protective safety buffer zones around nuclear facilities to limit public exposure to radiological and hazardous chemicals from routine operations and accidents. These zones, known as exclusive use zones (EUZ), extend from the facility to a distance that the public could potentially be exposed to radiological doses from routine and accidental releases, to the point where uncontrolled public access can be routinely allowed.

For potential accidental releases from Hanford nuclear facilities, DOE/RL-2014-21, *Review of Exclusive Use Zones Nuclear Safety Bases in Relation to Potential Alternative Land Use/Conveyances of the Hanford Site*, provides an evaluation of the bases for establishing the EUZs. The report concluded that the EUZs could be defined by the calculated radiological dose consequences from accidental releases under two scenarios.

- Scenario one: For nuclear facilities that do not have safety-class structures, systems, or components to reduce radiological consequences from accidental releases, the distance to the EUZ boundary would be defined by a potential unmitigated dose of 25 rem total effective dose equivalent (TEDE).
- Scenario two: For nuclear facilities where safety-class structures, systems, and components have been defined to mitigate radiological releases, the distance to the EUZ boundary would be defined by a potential mitigated dose of 25 rem TEDE.

Figure 4 shows the EUZ boundaries for each of the major Central Plateau nuclear facilities. The EUZ for the 100K Sludge Treatment Project has not been included because the project will be completed by 2020 before any land reuse near the 100K Area. Outside of these boundaries, uncontrolled public and tribal access can be routinely allowed without affecting the facilities' nuclear safety bases. Nuclear safety is only one of the protective features to ensure public safety before routine uncontrolled public and tribal access. Other protective features include environmental permits, radiological controls, and emergency preparedness. The discussion on nuclear facility safety and EUZs does not account for these other features, which might be more restrictive than features emplaced strictly from a nuclear safety perspective.



141208_NuclearFacilEUZs_65x85_Rev7 1/21/2016

Figure 4. Nuclear Facility Exclusive Use Zones.

3.9 EMERGENCY MANAGEMENT

Emergency management considerations for public access areas are based on requirements defined in DOE O 151.1C, *Comprehensive Emergency Management System*. This system identifies planning, preparedness, and response activities that are required to protect permanent and transient populations that may be affected by a release of hazardous materials.

These activities are conducted within an area called an Emergency Planning Zone (EPZ), which is established for facilities with a potential to release hazardous materials to the environment. The EPZs are determined based on potential emergencies in each facility's emergency planning hazards assessment and an evaluation process that is documented in DOE/RL-2012-18, *Evaluation of the Hanford Emergency Planning Zones*.

The River Corridor is within current EPZs (Figure 5) for the Plutonium Finishing Plant, 100K Area, 200 East and 300 Areas. As cleanup progresses for the Plutonium Finishing Plant and the 100K Area, these EPZs are expected to be reduced and finally eliminated. The 300 Area EPZ is expected to remain relatively unchanged until demolition of buildings 324 and 325.

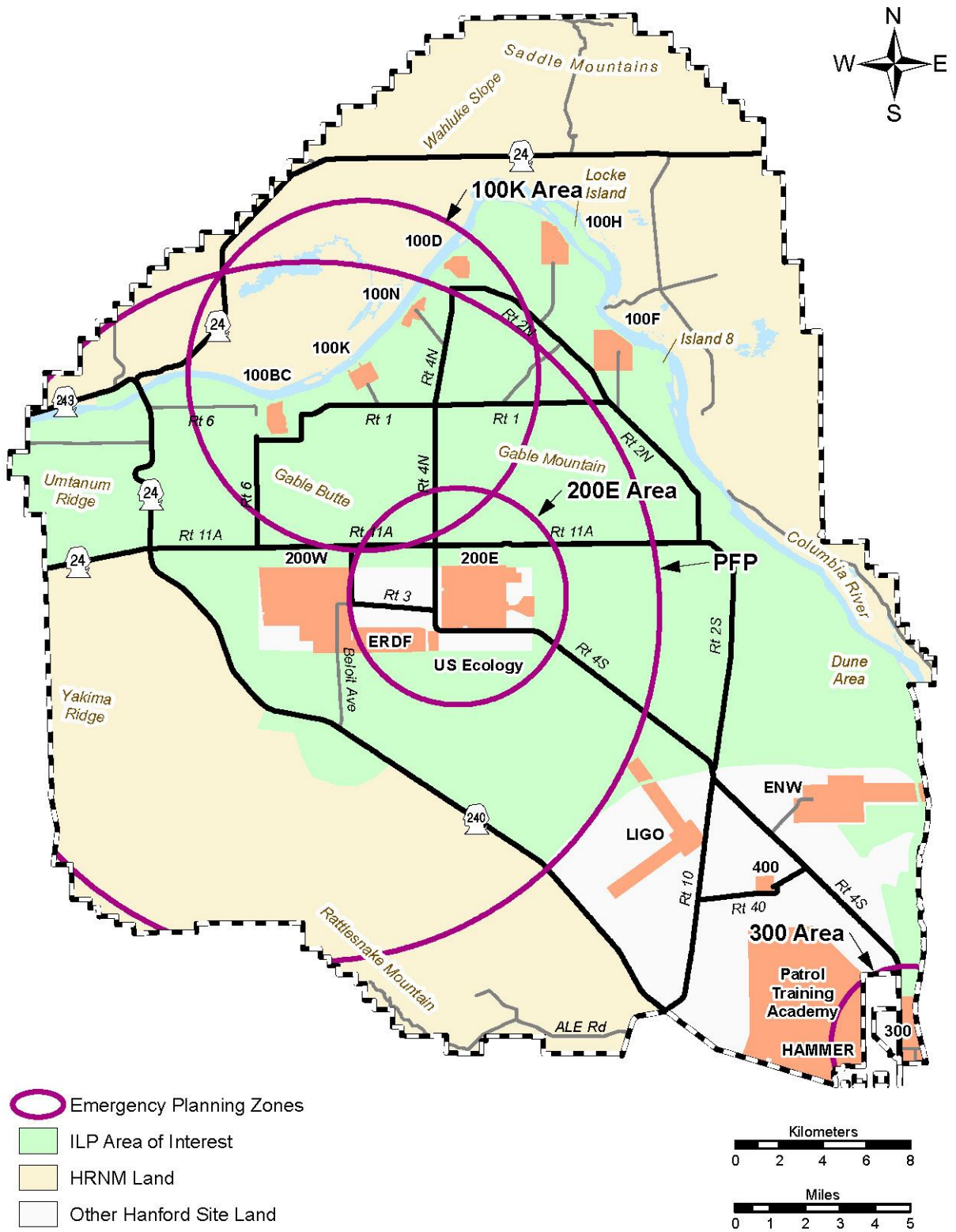
The hazards associated with the Waste Treatment and Immobilization Plant (WTP) will require a new EPZ, the size is yet to be defined but can be assumed to be no larger than the 10-mile maximum established for DOE facilities.

DOE maintains detailed planning and resources to provide time-urgent warning, protective action direction (i.e., evacuation/sheltering), and controlling access within EPZs. Because of the nature of activities that can be expected in general access areas, audible outdoor warning signals (sirens) would be needed to notify the onsite public. Existing Columbia River emergency sirens may provide coverage for some of the River Corridor, but do not provide coverage for all the future general access areas. Based on current guidance, evacuation should be accomplished within approximately 1 hour of an emergency, on-duty personnel would be needed to establish access control and sweep areas to ensure evacuation has been completed. Accountability methods, such as a visitor sign-in process, would allow emergency responders to prioritize actions.

DOE is responsible to advise the public about how they will be notified and what actions they should take in an emergency. Signage will be installed at the entrance, in parking lots, sign-in locations, and other prominent points in the public access areas advising the public about what to do in an emergency.

The onsite public who may have been exposed to hazardous materials during a declared emergency would be monitored or provided access to medical evaluation. Current Hanford emergency procedures would likely require more detailed planning for the monitoring and evaluation process (e.g., locations, numbers of people, and frequency of visits).

The Columbia Generating Station (CGS) has a 10-mile EPZ that encompasses portions of the River Corridor lands south of F Reactor. In the event of an emergency at CGS, DOE has been responsible to determine protective actions and warn persons on the Hanford Site outside the CGS leased lands. These responsibilities would carry forward for the onsite public who may be within the CGS 10-mile EPZ.



150316_EmerPlanningZones_65x85_Rev2 1/7/2016

Figure 5. Hanford Site Emergency Planning Zones.

3.10 HAZARDOUS MATERIALS TRANSPORTATION

Long-term cleanup activities associated with the Central Plateau will include transporting hazardous materials on Site roadways. DOE O 460.1C, *Packaging and Transportation Safety*; and 10 CFR 830, “Nuclear Safety Management,” require establishing and maintaining an onsite transportation and packaging program for the safe movement of hazardous materials, substances, and wastes. The transportation and packaging program is documented in DOE/RL-2001-36, *Hanford Sitewide Transportation Safety Document (HTSD)*. The program provides a level of onsite (out-of-commerce) safety equivalent to that achieved offsite (in commerce) under U.S. Department of Transportation regulations provided in 49 CFR 1, Subchapter C, “Hazardous Materials Regulations,” and U.S. Nuclear Regulatory Commission (NRC) standards provided in 10 CFR 71, “Packaging and Transportation of Radioactive Material.”

The HTSD describes the transportation and packaging program for all packaging and shipments of hazardous materials on Site-controlled access roads. The HTSD defines the Site-controlled access roads as:

Hanford Site roads where public access is controlled or otherwise restricted. Controls include barricades, fences, signs, and Hanford Patrol checkpoints. Road closures can be executed on certain roads to convert a public access roadway to a controlled access roadway.

These roads are sometimes referred to as out of commerce because the public cannot come in contact with the hazardous material shipments. When physically controlling out-of-commerce areas, the HTSD, Section 3.2, Public Access, cites:

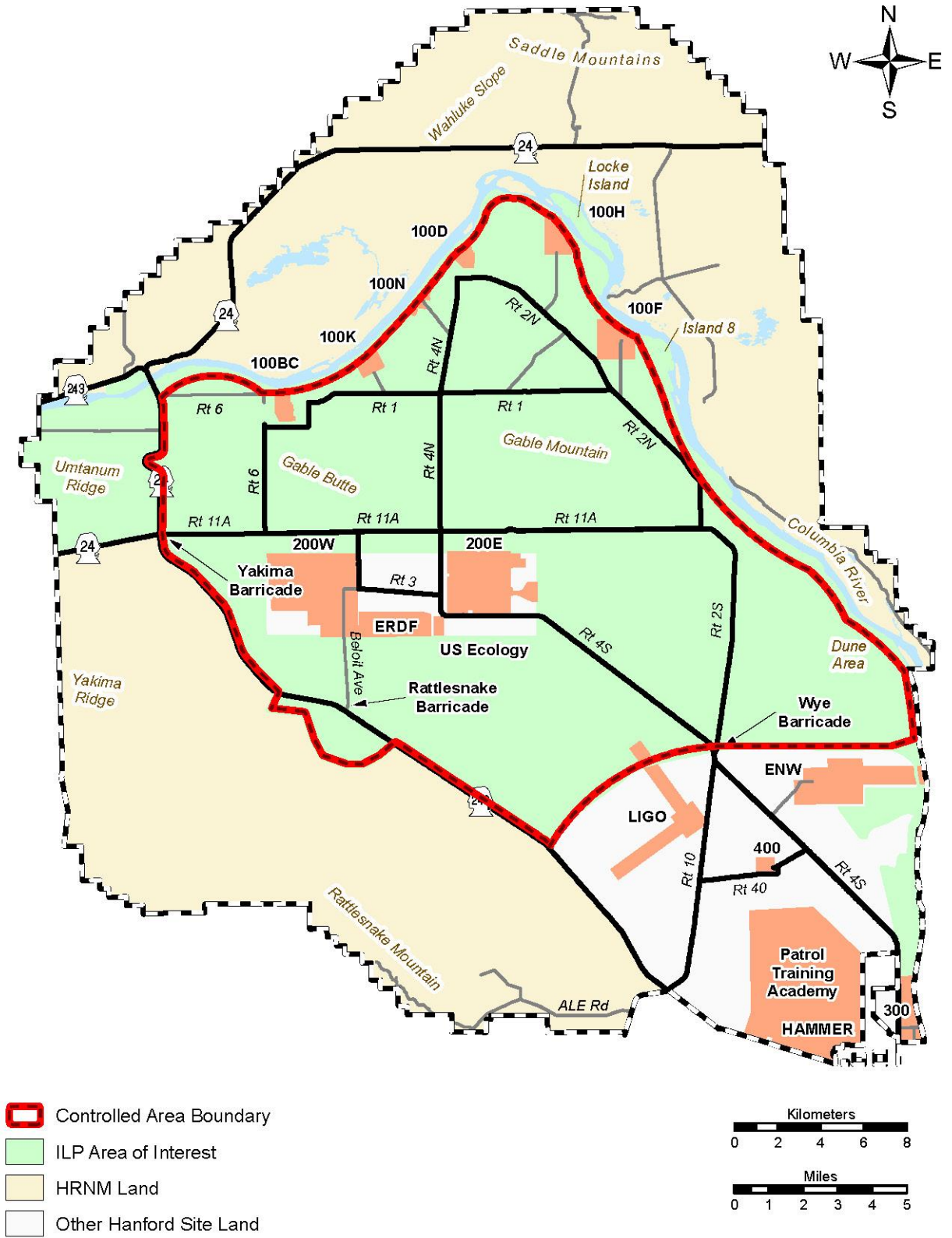
The Hanford Site boundary is marked by fences and signs. With the exception of one area, public access to other than roadways is restricted. Fences, signs, and security patrols are used to enforce the access restrictions.

If public access areas are opened in the River Corridor, converting portions of Hanford’s road system to public access roads would require modifying barricades, fencing, and signage to mark the out-of-commerce areas and maintain compliance with the HTSD.

3.11 SECURITY

A majority of the ILP area of interest remains controlled as a ‘property protection area’ to support ongoing DOE missions. While more stringent security requirements exist around several of DOE’s facilities on the Central Plateau, the property protection area is established to protect employees, government buildings and facilities, and property. The physical restrictions of the property protection area also comply with public safety requirements for waste management activities under RCRA and CERCLA while providing buffer zones for nuclear safety and security associated with facilities and activities on the Central Plateau and in the River Corridor.

Figure 6 shows the current controlled area (or property protection area) for Central Hanford. As shown in the figure, vehicle access to the 100, 200, and North 600 Areas is through one of three gates: 1) Wye, 2) Yakima, or 3) Rattlesnake Barricade. All three barricades are expected to remain open and active to support DOE’s missions on the Central Plateau.



150204_ControlledAreaCurrent_65x85_Rev4 1/7/2016

Figure 6. Current Controlled Area Boundary.

As with the HTSD, to maintain compliance with DOE security directives (DOE O 473.3, *Protection Program Operations*), modifications to existing barricades, fencing, and signage would be required to reduce the size of the property protection area and create general access areas that facilitate public access and development of recreational facilities along the River Corridor. The physical security requirements for general access areas will be a constraint on future land uses in those areas.

3.12 RCRA/CERCLA CONTROLS

The Hanford cleanup mission follows both RCRA and CERCLA regulations. Under Washington state regulations, the Site is considered a single RCRA facility consisting of multiple treatment, storage, and disposal units, and is covered under one RCRA permit. The Hanford Site also contains multiple CERCLA operable units governed by 40 CFR 300, “Protection of the Environment.” Cleanup for each operable unit is defined under CERCLA by remedial actions that are approved in separate RODs.

Washington state regulations for RCRA facilities and 40 CFR 300 requirements for CERCLA operable units dictate the need to maintain physical security around active cleanup areas. 40 CFR 300.415, “Removal Actions,” part e(1), states, in part, that “fences, warning signs, or other security or site control precautions — where humans or animals have access to the release” are appropriate as a general rule for removal actions under CERCLA. *Washington Administrative Code* (WAC) 173-303-310, “Security,” requires RCRA treatment, storage, and disposal units to have “signs posted at each entrance to the active portion, and at other locations, in sufficient numbers to be seen from any approach to the active portion.” The facility also must have “an artificial or natural barrier, or a combination of both, which completely surrounds the active portion of the facility, with a means to control access through gates or other entrances to the active portion of the facility at all times.” These security requirements are provided in WA7890008976 *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion*, Rev. 8C, dated December 31, 2014.

A majority of the remedial actions have been completed for CERCLA operable units in the River Corridor in accordance with the associated RODs. Over the long term, DOE is required to maintain the institutional controls (ICs) specified by the CERCLA RODs, conduct CERCLA 5-Year Reviews to assess the effectiveness of the remedial actions, and determine and implement the actions necessary for final disposition of the plutonium production reactors. DOE has no near-term plans to delist the 300 and/or 100 Areas of the River Corridor from the CERCLA National Priority List.

The majority of the River Corridor has been cleaned up in accordance with interim CERCLA RODs established in the mid-1990’s. Remedial actions taken under the interim CERCLA RODs allow for “unrestricted” surface use of the lands. DOE is in the process of obtaining final CERCLA RODs and will complete any additional River Corridor cleanup required by the final RODs. DOE also is remediating the 618-10 and 618-11 burial grounds, remediating a waste site under a former chemical laboratory (324 Building) and demolishing the 324 Building itself. DOE also is remediating the remaining waste sites and demolishing the remaining facilities in the 100K Area, placing the last two production reactors into “interim safe storage,” and continuing to remediate areas of contaminated groundwater called plumes, in the River Corridor (Figure 7).

Richland Operations Office River Corridor Projects

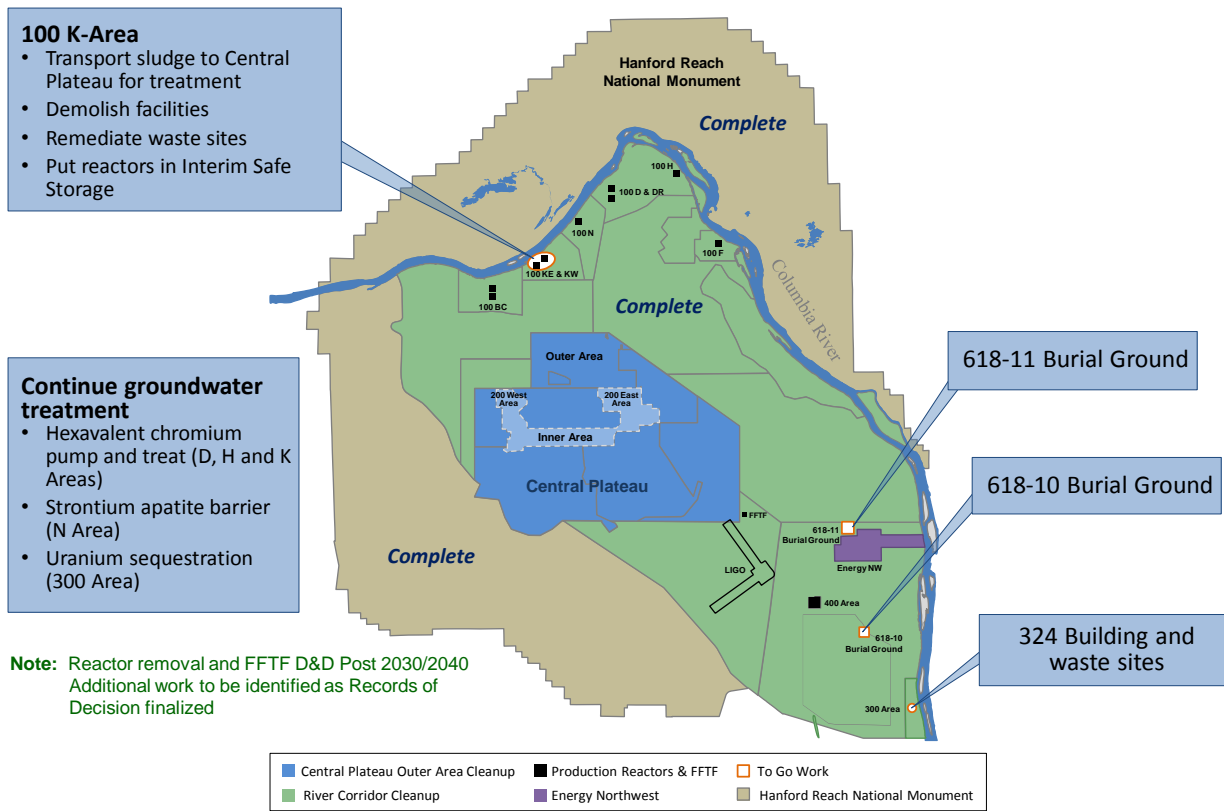


Figure 7. River Corridor Ongoing Cleanup.

Ongoing cleanup in the 100K Area, including interim safe storage, or “cocooning” of the 100K East and 100K West reactor buildings, will continue through approximately 2025. Remedial actions remain for the other six cocooned reactor buildings in the 100 Areas and for groundwater operable units. The reactor buildings will remain in their approved “interim safe storage” configuration for up to 75 years to allow sufficient time for radiation levels within the graphite cores to decay to levels safe for final demolition.

Active groundwater treatment systems in the 100D and 100H Areas (100-HR-3 groundwater operable unit) and the 100K Area (100-KR-4 Groundwater Operable Unit) are expected to operate for another 15 years or more to reduce contamination levels to acceptable standards. Security controls under the CERCLA regulations will be evaluated for these remaining remedial actions to support future public and tribal access.

RCRA and CERCLA waste sites on and around the Central Plateau are expected to remain under active cleanup for 35 years or more. Additional fences (artificial barriers) and signage needs to be placed around these remaining active areas as a demarcation between any future public access areas in the River Corridor and DOE’s controlled waste management areas. These boundaries

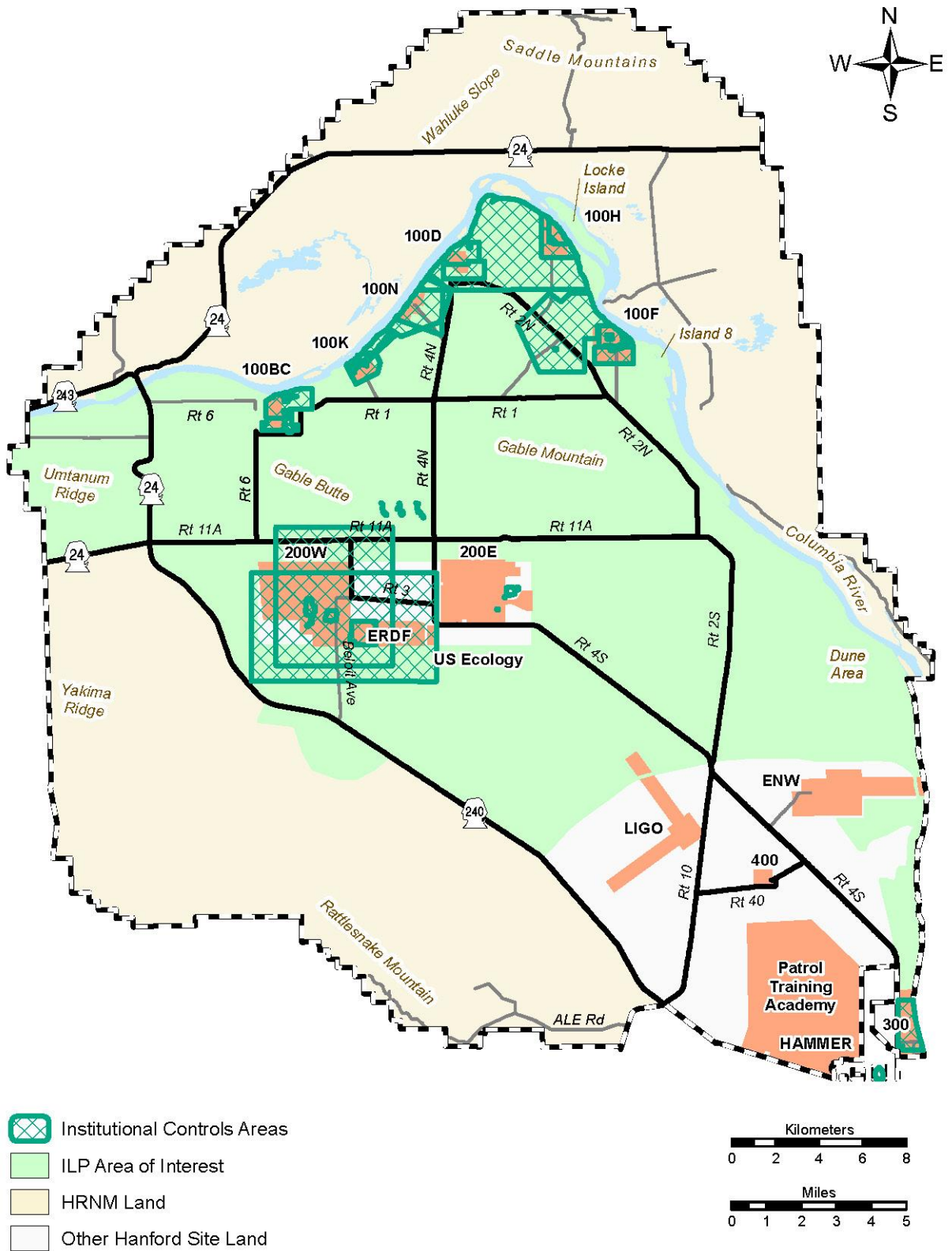
should be consistent with those currently used for the property protection area for Site physical security.

In addition to limiting public access to the active cleanup areas, ICs are in place to ensure cleanup work completed in the River Corridor continues to be protective of people and the environment. ICs are administrative and physical mechanisms used to protect the integrity of a cleanup or response action and/or minimize exposure to residual contamination in soil and groundwater until contamination is at levels that allow for unlimited use and unrestricted exposure. ICs include nonengineered restrictions on activities and access to land, groundwater, surface water, waste sites, waste disposal areas, and other areas or media that may contain hazardous substances to minimize the potential for human exposure. DOE is responsible for implementing, maintaining, reporting, and enforcing ICs established in the appropriate RODs.

Implementation, maintenance, and periodic inspection requirements for ICs are described in DOE/RL-2001-41, *Sitewide Institutional Controls Plan for Hanford CERCLA Response Actions and RCRA Corrective Actions*. Specific IC information and land-use control maps are found in DOE/RL-2001-41 (Appendix A) and individual RODs. The ROD for the *Hanford 100 Area Superfund Site 100-FR-1, 100-FR-2, 100-FR-3 100-IU2, and 100-IU-6 Operable Units* (EPA 2014) provides land-use controls that will be maintained until cleanup levels are achieved and concentrations of hazardous substances are at levels that allow for unlimited use and unrestricted exposure, and EPA authorizes the removal of restrictions. ICs that support achieving remedial action objectives include the following:

- Soil:
 - Utilize ICs in areas where contamination below 4.6 m (15 ft) exceeds residential use cleanup levels to ensure that future activities do not carry contamination to the surface or otherwise result in exposure to contaminant concentrations that exceed the cleanup levels.
 - Prohibit irrigation over or near the 107-F Retention Basin (Waste Site 116-F-14) that represents an unacceptable surface water protection risk.
- Groundwater:
 - Employ and maintain an excavation permit program limiting groundwater access and use in the 100-FR-3 Operable Unit to research purposes and employee monitoring and treatment in areas where groundwater contamination is still higher than cleanup levels.
 - Prevent access or use of the groundwater for drinking water purposes until cleanup levels are met.

Figure 8 identifies areas where ICs are applicable on the Hanford Site. Detailed and site-specific ICs are found in DOE/RL-2001-41.



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Figure 8. Institutional Controls Areas.

3.13 ENVIRONMENTAL AIR PERMITS

WAC 173-401, “Operating Permit Regulation,” establishes the elements of a comprehensive air operating permit program consistent with the requirements of the *Clean Air Act of 1977*, Title V; WAC 173-480, “Ambient Air Quality Standards for Emission Limits for Radionuclides”; and WAC 246-247, “Radiation Protection—Air Emissions,” establishes the specific state permitting and compliance requirements for radioactive air emission units, while similar state requirements for toxic air emission units, frequently referred to as “nonradioactive air emission units,” are found in WAC 173-400, “General Regulations for Air Pollution Sources,” and WAC 173-460, “Controls for New Sources of Toxic Air Pollutants.”

Applicable air permitting and compliance requirements for the Hanford Site are included in the Hanford Site Air Operating Permit, No. 00-05-006, issued under the authority of the State of Washington Departments of Ecology and Health, and the Benton Clean Air Agency. All Hanford Site air emission units are captured in this permit and can be referenced by permit number.

To determine compliance for radioactive emissions from air emission units, calculations are performed for the maximally exposed individual (MEI). WAC 246-247-030 defines the MEI as “any member of the public (real or hypothetical) who abides or resides in an unrestricted area, and may receive the highest TEDE from the emission unit(s) under consideration, taking into account all exposure pathways affected by the radioactive air emissions.” Developing uncontrolled public access areas along the River Corridor require an evaluation of the MEI location and a potential revision to Hanford’s Radioactive Air Emissions License, FF-01.

When determining compliance for nonradioactive emissions of toxic air pollutants (TAP), an emission unit can be evaluated to show that emissions are either below the small-quantity emissions rate or the acceptable source impact level (ASIL) for a particular TAP. Current Hanford Site nonradioactive air emission units were reviewed and several have TAP emissions either below a defined de minimis value where a notice of construction (NOC) application is not required or below the small-quantity emissions rate where dispersion modeling is not required to show compliance to the ASIL. These emission units would be unaffected by allowing public access to the River Corridor lands. However, for several emission units on the Central Plateau, air dispersion modeling was used to show compliance with the associated ASIL for a NOC application submittal. The dispersion calculations used for these NOCs typically assumed a point of exposure to the TAP at the Hanford Site boundary, outside of which routine public access is allowed and/or expected. The point of exposure would have to be recalculated to verify continued compliance with TAP air quality standards before establishing public and tribal access to the River Corridor.

The Hanford Site Dangerous Waste Permit provides requirements for a risk assessment regarding the Hanford Tank WTP operations. The WTP will include two waste vitrification facilities and a pretreatment facility in the 200E Area of the Central Plateau. The risk assessment evaluates potential risks to human health and ecological resources from air emissions of the WTP under various, realistic exposure scenarios and is reported in 24590-WTP-RPT-ENV-14-002, *Environmental Risk Assessment Work Plan for the Hanford Tank Waste Treatment and Immobilization Plant*. The potential exposure scenario for recreational activities within the River Corridor should be evaluated to determine if the scenario creates new, bounding exposure conditions. While preliminary analyses indicate that the recreational scenario does not pose any

higher risks than the scenarios evaluated in the current risk assessment, the assessment documentation would need to be updated to reflect the official evaluation.

3.14 RADIOLOGICAL CONTROLS

River Corridor lands are currently monitored under the requirements of 10 CFR 835, “Occupational Radiation Protection,” to ensure the safety of workers and visitors from the hazards of ionizing radiation. Before establishing public and tribal access to the River Corridor, the lands need to be evaluated and released from radiological controls.

To remove those controls and allow safe public access, DOE O 458.1, *Radiation Protection of the Public and the Environment*, dictates the high-level process for the radiological clearance of real property. Real property includes land and structures permanently attached to the land.

The radiological clearance process includes the following requirements:

Historical Site Assessment. The historical site assessment provides the radiological history of the site being considered for clearance. The historical site assessment develops a conceptual model describing the type (radionuclides of concern) and distribution of the radioactive material on the site and includes recommendations about how to divide the site into survey units. It is the basis on which authorized limits are developed and one of the bases of the main survey plan.

Authorized Limits. Authorized limits are soil concentration levels of radionuclides (radionuclides of concern) for land and surface contamination limits for existing structures that still meet the DOE dose constraint (25 mrem/year for humans) given the type of activity (e.g., recreation) to be conducted on the site. Limits for biota also must be met. DOE approves authorized limits.

Main Survey Plan. The main survey plan (sometimes called a sampling and analysis plan) describes how radiological surveys will be conducted to demonstrate that approved authorized limits have been met. The plan describes the number and locations of soil samples, the areas to be radiologically scanned for elevated radioactivity, quality assurance measures, staff training and qualifications, and operating instructions. The main survey plan is typically reviewed by an independent verification contractor and is approved by DOE.

Field Measurements and Analyses. Field measurements and analyses include soil sampling and surface scanning, followed by analyses to determine whether the authorized limits have been met. These activities are sometimes supported by subplans that provide more detail on soil sampling and surface scanning. Soil sampling analyses compare the sample results with the authorized limit, duplicate quality assurance samples, and sometimes with the independent verifier’s samples. DOE’s independent verification contractor may take independent soil samples for analyses at their laboratory, examine calibrations of instruments, and perform related activities.

Final Report. The final report summarizes results of the radiological clearance process and the results of the measurements and analyses. The report recommends whether or not the authorized limits have been met and justifies the recommendation. From this report, DOE will make the final decision regarding release of the real property.

3.15 REAL ESTATE ENCUMBRANCES

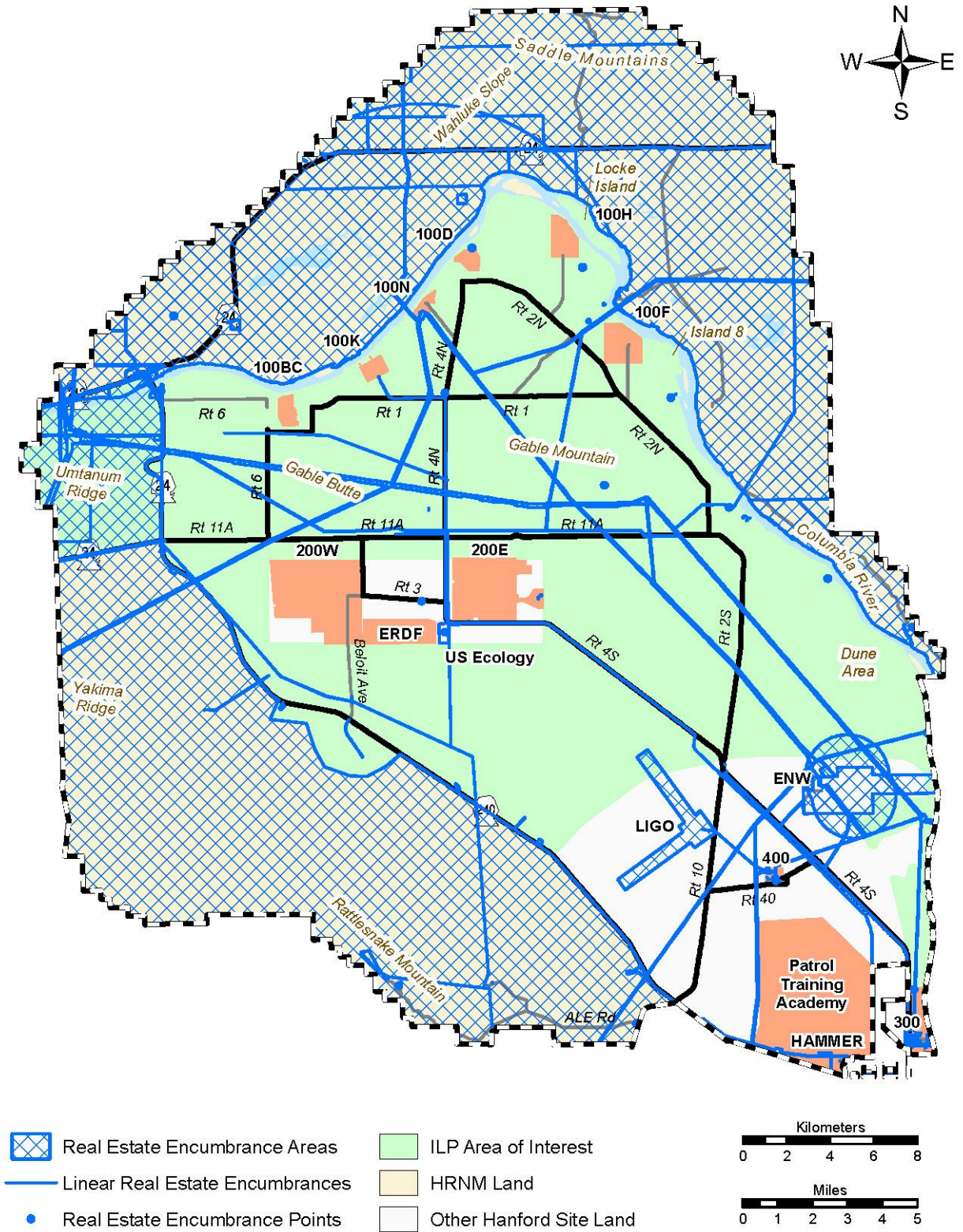
RL has many agreements with non-DOE entities to use Hanford Site property. These agreements include leases, easements, licenses, and permits. The type of agreement depends on the type of access needed, the party the agreement is with and the length of time access is needed. Depending on the individual agreement and its conditions, other land uses could be denied or limited. The limitations on these agreements vary and would need to be explored on a case-by-case basis. Figure 9 shows the real estate encumbrances on the Hanford Site.

A major subset of the Hanford Site is the HRNM (discussed in Section 3.2). The HRNM encompasses approximately 195,000 acres within the Hanford Site. While DOE is the land owner, the USFWS manages approximately 165,000 acres of the monument through DOE-RL (2001), *First Amended Memorandum of Understanding Between the U.S. Department of the Interior, Fish and Wildlife Service and the U.S. Department of Energy, Richland Operations Office for the Operation of the Fitzner-Eberhardt Arid Lands Ecology Reserve at the Hanford Site; Fourth Amendment to the Wahluke Slope Permit*. The Proclamation that established the HRNM requires USFWS and DOE to consult each other about management of the monument lands.

Bonneville Power Administration (BPA) has a long-term permit for electrical transmission lines across the Site. Several substations and a network of transmission lines are located in rights of way permitted by RL. Power generated by federal hydroelectric stations on the Snake and Columbia rivers, and from the CGS is routed through the substations. The BPA substations and associated transmission lines are a key component of the federal Columbia River Transmission System for electrical power distribution in the Pacific Northwest. The width of the permitted area varies for each section of the transmission line and substation facility depending on the equipment in use. Additional agreements include permits for the hundreds of miles of high-voltage electrical transmission lines that traverse the Hanford Site.

Energy Northwest leases a 1,085-acre parcel where the CGS is located. The CGS is an NRC-licensed nuclear power plant. Energy Northwest recently completed a license extension with the NRC and holds a permit out to 2043. An emergency planning zone surrounding the station and a firing range could affect activities outside the leased parcel. Energy Northwest also has a license for eight emergency sirens located along the Columbia River outside the leased parcel.

The Laser Interferometer Gravitational Wave Observatory (LIGO) is an advanced scientific observatory used to measure gravity waves at extremely minute levels. LIGO is operated under a permit with the National Science Foundation by the California Institute of Technology and the Massachusetts Institute of Technology. Although not a DOE mission, LIGO was situated on the Hanford Site because of the availability of space, its seismic stability, and minimal man-made sources of vibration such as heavy traffic, mining, or wind turbines. Although, the initial permit under which LIGO was constructed is set to expire in 2018, significant equipment upgrades were completed at LIGO in 2015 to increase measurement sensitivity. Following these upgrades, LIGO is expected to have a research mission until approximately 2035. The permit will be extended to support the balance of LIGO's research.



150226_RealEstateEncumbrances_65x85_Rev4 1/7/2016

Figure 9. Real Estate Encumbrances.

The U.S. Department of the Navy has a permit for interim storage of decommissioned naval reactor plants in the operating area of the Central Plateau (pursuant to *Strategic Arms Limitation Treaty II* [SALT II 1979]). The receipt of decommissioned naval reactor cores is planned to continue through approximately 2050. Routes 2S and 11A are used to transport the reactor cores from the Port of Benton in north Richland to the Central Plateau and must remain accessible.

DOE deeded 640 acres of the River Corridor area to Ecology for the purpose of storing, processing, and disposing of hazardous industrial waste. This 1-mi² parcel is located approximately 3 miles west of LIGO, north of State Route (SR) 240. While the state of Washington does not have specific plans to develop the site, it remains an encumbrance to other future land uses.

DOE provides numerous smaller licenses, permits, easements, memoranda of understanding, and other instruments that provide interim or long-term access to Hanford Site lands. These instruments range from easements provided to Washington for state-operated roads and highways to easements for fiber optic cable and fixed-term licenses for small telecommunications towers. Future land-use decisions will need to consider these easements and miscellaneous instruments on a case-by-case basis.

3.16 INFRASTRUCTURE

Hanford Site infrastructure is driven by both internal DOE mission requirements and external needs (e.g., Hanford Site tenants, BPA transmission system). The River Corridor major infrastructure consists of the following systems:

- Roadway system
- Electrical transmission and distribution system
- Water system
- Sanitary sewer system
- Information Technology (IT) network system.

HNF-44238, *Infrastructure and Services Alignment Plan*, is the Site's infrastructure strategic plan, which is updated annually to address the changing needs of DOE and the Site tenants and integrates these requirements to develop a long-term strategy for construction, modernization, and elimination of Site infrastructure. Portions of the infrastructure in the River Corridor have a long-term mission to support DOE's cleanup efforts and the needs of other Hanford Site tenants. The infrastructure could support the facilities associated with the Manhattan Project National Historical Park; however, several systems are expected to be abandoned and potentially removed as cleanup continues to progress.

3.16.1 Roadway System

The River Corridor roadway system was constructed and is maintained by DOE and its contractors to support DOE's missions and to access the US Ecology, Inc., low-level waste disposal facility and the U.S. Navy's reactor core disposal facility. With completion of cleanup efforts in the 100 Areas (excluding reactor demolition and disposal), resources will focus on the road system supporting Central Plateau facilities.

No new major roadways are anticipated and DOE-funded maintenance of paved roadways in the 100 Areas will be eliminated. While the existing roadways in the 100 Areas will no longer be maintained by the DOE-funded cleanup program, the roads may remain as available access routes to the River Corridor to support the recreational facilities described in the CLUP as well as access to the Manhattan Project National Historical Park facilities.

3.16.2 Electrical Transmission and Distribution System

The electrical transmission system that traverses the River Corridor includes both 115kV and 230kV transmission lines and their associated rights of way. The distribution system, shown in Figure 10, comprises the 100K Area substation and several 13.8kV overhead distribution lines. The system supports DOE's ongoing cleanup missions in the River Corridor (mainly 100K) and the B Reactor National Historic Landmark operations, tours and maintenance. Distribution lines also provide power to raw water pumping facilities in the 100B and 100D Areas. These facilities have a long-term mission providing raw water to the Central Plateau. While it is anticipated that the 100K Area substation can be eliminated following completion of cleanup work in the 100K Area, the 13.8kV distribution lines in the 100 Areas are likely to remain to support current and future DOE cleanup needs.

3.16.3 Water System

The River Corridor contains two water supplies from the Columbia River. Pump houses in the 100B and 100D Areas draw water from the river and pump it to nearby holding reservoirs.

A second set of pumps at each reservoir exports the water to the Central Plateau for potable water, fire suppression, process cooling water, and waste remediation. These systems and the associated buried piping are expected to remain in place for the duration of DOE's cleanup mission. Figure 11 shows the water system layout.

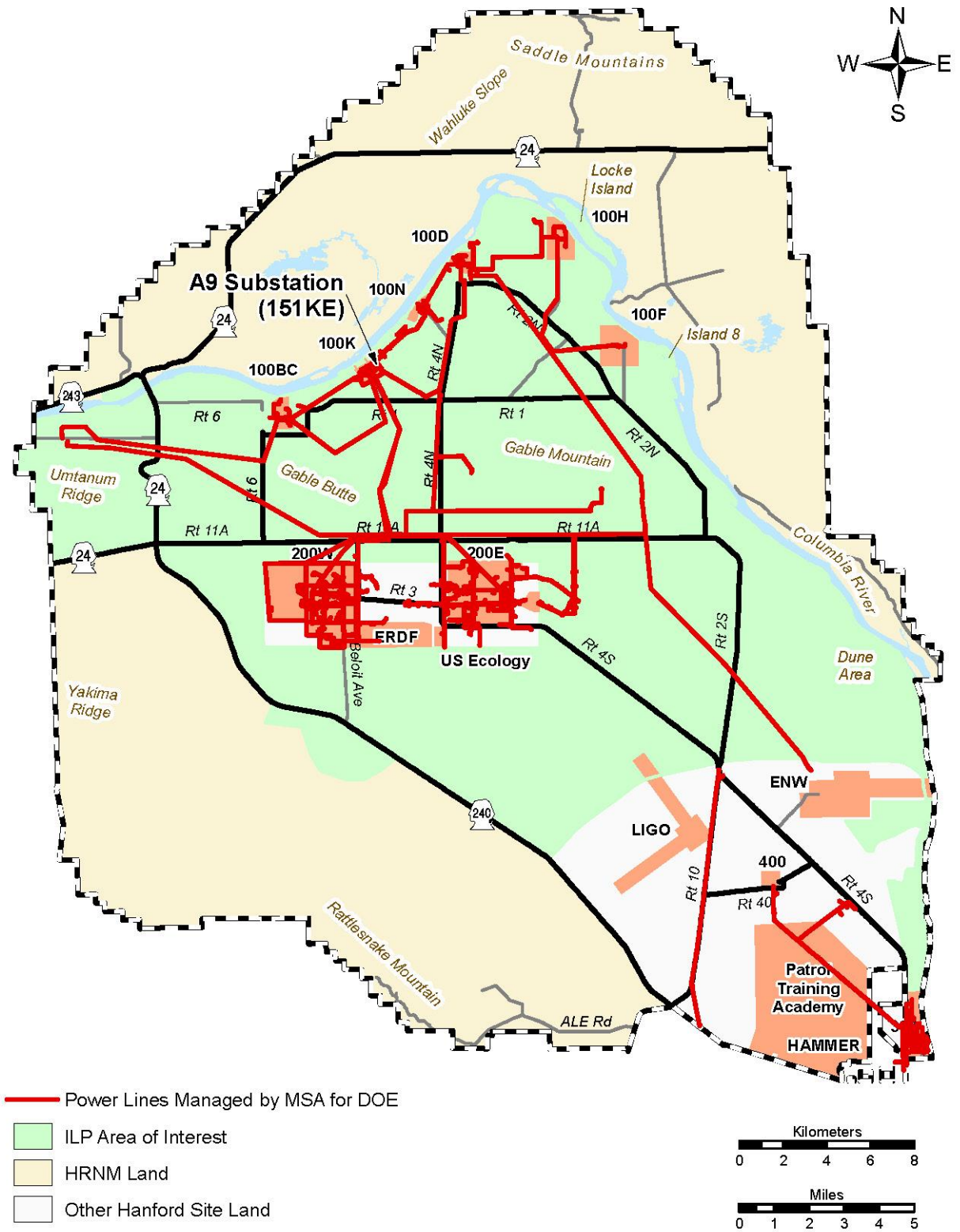
The export water system feeds a distribution line to the 100K Area that supports ongoing cleanup and several additional lines that supply remote fire hydrants in the River Corridor. The fire hydrant distribution lines to the 100F, 100H, and 100N Areas are expected to be abandoned and capped, making the lines unavailable for future land uses. The 100K Area supply line will be capped off when remediation work in the area is completed.

3.16.4 Sanitary Sewer Systems

The only active sanitary sewer systems in the River Corridor are in the 100K Area supporting remediation work expected to continue through approximately 2025. A sanitary sewer lagoon serves holding tanks in the 100K Area. A majority of the septic systems built to support the production reactors in the 100 Areas were removed because they contained hazardous materials and/or radiological contamination. The few systems that were not contaminated were isolated and backfilled. Because these systems were closed in accordance with state permits, the legacy sanitary sewer systems in the River Corridor do not represent a nonconformance to future land uses.

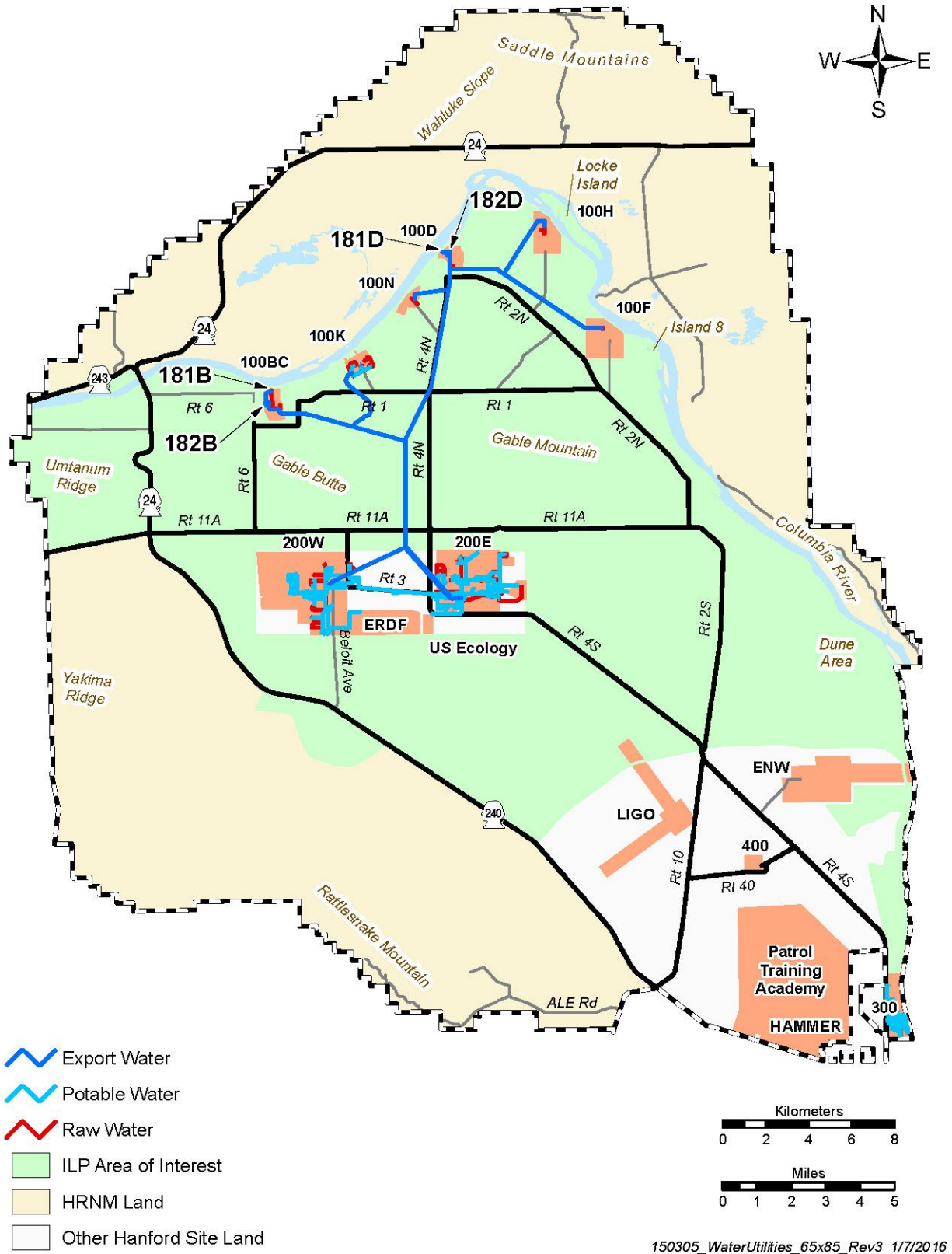
3.16.5 Information Technology Network Systems

IT infrastructure in the River Corridor comprises radio and pager towers in the 100 Areas, Gable Butte and Gable Mountain, and emergency sirens along the river for emergency notification of Site workers and the public. The IT infrastructure is expected to remain in place in the near term to continue supporting DOE's missions.



150225_ElectricalUtilities_65x85_Rev5 1/21/2016

Figure 10. DOE Electrical Utility Lines.



150305_WaterUtilities_65x85_Rev3 1/7/2016

Figure 11. Water Systems.

3.17 MINING

Borrow pits have been used throughout Hanford to provide sand, gravel, and basalt materials for the following:

- Backfill and capping of waste sites
- Aggregate for concrete and roads
- Construction material for landfill disposal cells in the Environmental Restoration Disposal Facility (interim cap and drainage layer)
- General construction aggregate.

Figure 12 shows the borrow pits and quarries onsite. These pits are managed in accordance with DOE/RL-2015-53, *Industrial Mineral and Conservation Plan*.

3.17.1 Active Pits

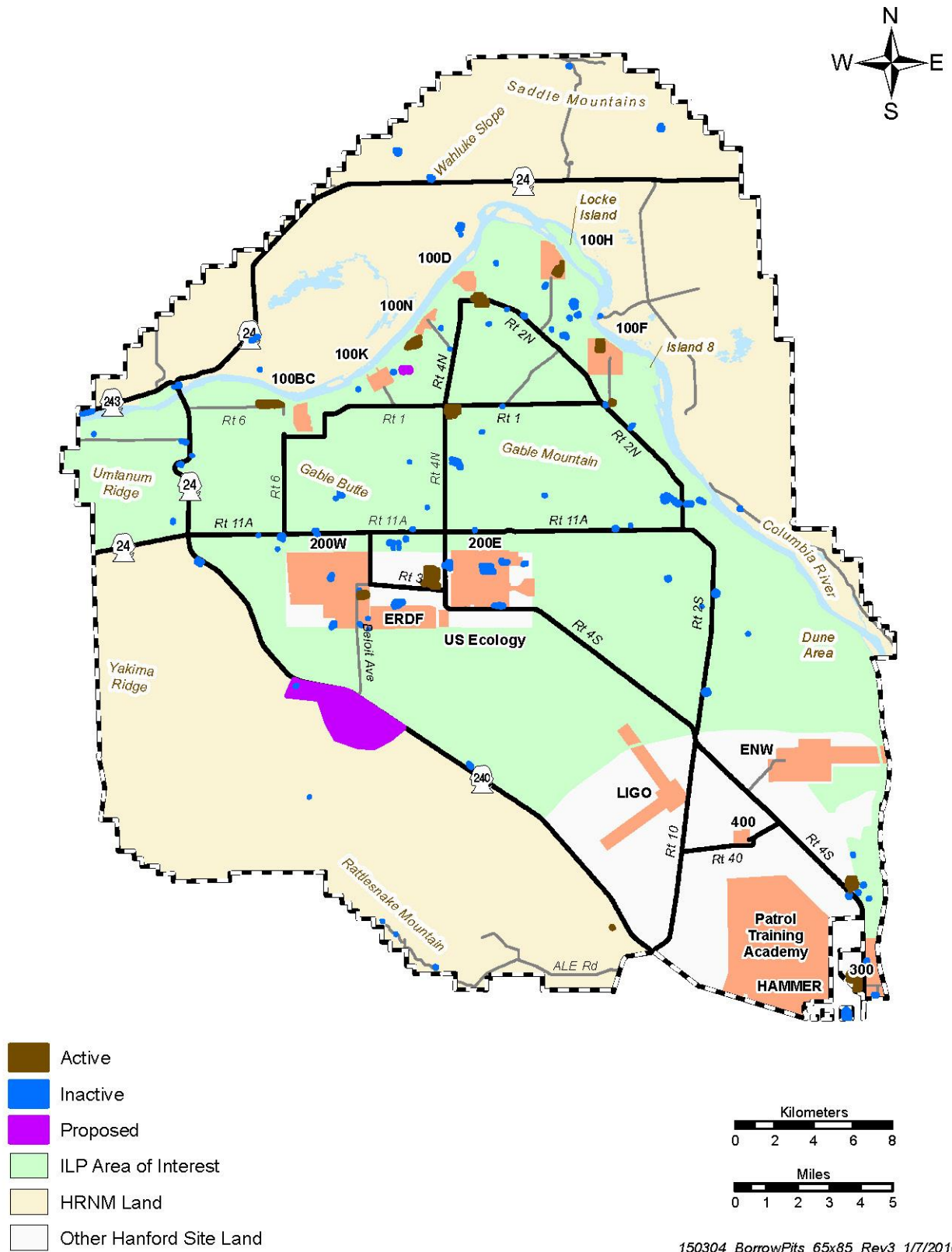
The ILP area of interest contains five active borrow pits (Pits H, N, 21, 23, and 24). These pits provide aggregate and soil to support ongoing remediation activities. An environmental assessment, DOE/EA-1934, *Environmental Assessment for the Expansion of Borrow Areas on the Hanford Site*, allows for continued use of existing pits and system expansion to 11 pits (Pits F, H, N, 6, 9, 18, 21, 23, 24, 30, and 34). Pits F and 18 are not needed and are considered inactive. DOE/EA-1934 allows for the continued supply of aggregate and soil through FY 2023.

3.17.2 Inactive Pits

Other pits and quarries that are no longer active are scattered throughout the Site. Many of these pits have been referred to by different names over the years (e.g., quarries, unofficial pits, construction pits). Pits identified by the U.S. Geological Survey as borrow pits include some that predate the Manhattan Project. The exact use for many of these pits is unknown, but most were considered one-time use to support onsite construction of roads and rail. These pits have not been used for many years (often 20 years) and have naturally revegetated. A significant number of these pits are not shown on the map but can be recognized as slight depressions.

3.17.3 Proposed Pits

DOE/EIS-0222-F identifies Borrow Area C as the primary source of silt, loam, and basalt rock borrow material available for Hanford Site remediation activities. Borrow Area C is located on the southwest side adjacent to SR 240 opposite Rattlesnake Gate and Beloit Avenue. Borrow Area C is not part of the HRNM, but is in the *National Register of Historic Places Determination of Eligibility Form for Laliik*—eligible traditional cultural property of Rattlesnake Mountain (Laliik) (RL 2008). Quarry 2, a small part of the northern portion of Borrow Area C, has been used as a borrow pit.



150304_BorrowPits_65x85_Rev3 1/7/2016

Figure 12. Borrow Pit Areas.

4.0 PUBLIC AND TRIBAL ACCESS TO THE RIVER CORRIDOR

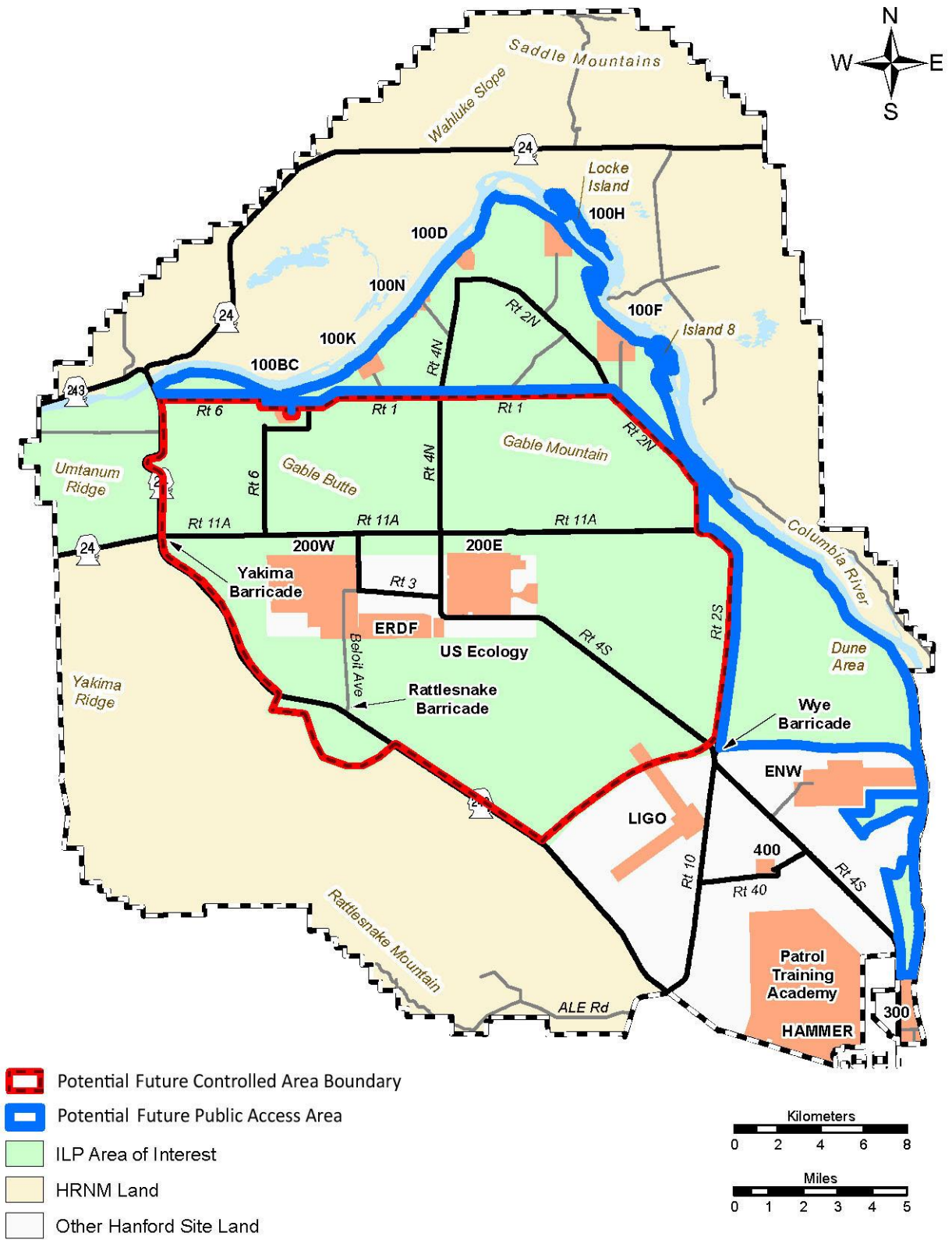
Facilitating public and tribal access to the River Corridor requires redefining the boundaries that separate controlled areas from general access areas that are designated for future recreational activities and tribal access. The goal is to prevent or minimize any adverse impacts to DOE's ongoing missions. To achieve that goal, the following criteria are applied:

- The safety bases of the Central Plateau nuclear facilities will not be adversely impacted such that the classification of safety systems would have to be amended.
- Air emission units would not require additional controls or monitoring to ensure compliance with toxic air pollutant limits.
- Radioactive air emission units would not require additional controls or monitoring to ensure compliance with the ambient air standard.
- Costs for treatment, packaging, transportation, and disposal of hazardous materials do not increase.
- Significant geographic features (e.g., roadways) will be used wherever possible to simplify the boundary demarcation.
- Existing roadways will be used for general access areas.
- Costs for the new boundary will be minimized by applying fencing and signage practices used along SR 240.
- Site access vehicle barricades will not be relocated.

These criteria ensure a property protection area boundary that maintains an appropriate distance from active facilities on the Central Plateau while providing adequate public and tribal access to areas in the River Corridor. The new boundary also facilitates access to most of the facilities designated under the Manhattan Project National Historical Park. Figure 13 shows the configuration of the controlled-area and where potential public and tribal access might be authorized.

Establishing uncontrolled public access outside the new controlled area will require evaluating and potentially modifying the following DOE programs:

- Nuclear facilities safety bases
- Hazardous material transportation and packaging
- Environmental air permitting
- Nuclear security
- RCRA/CERCLA controls
- Radiological controls.



150217_ControlledAreaFuture_65x85_Rev6 1/7/2016

Figure 13. Potential Future Controlled Area Configuration.

4.1 NUCLEAR FACILITY SAFETY BASES

The Central Plateau nuclear facilities define their safety bases by analyzing the potential radiological dose consequences from off-normal facility events to a hypothetical offsite person located at the Columbia River or Hanford's geographic boundary. To eliminate the need to revise the analyses and the safety bases of the nuclear facilities, the uncontrolled public that may visit the River Corridor lands will be assumed to be "onsite." This "onsite" designation will drive both notification and evacuation requirements for that population in the event of an emergency at one of the nuclear facilities.

4.2 HAZARDOUS MATERIAL TRANSPORTATION – NUCLEAR SECURITY – RCRA - CERCLA

These program areas require physical boundaries and signage to separate controlled access areas from uncontrolled areas. As such, new fencing, gates, and signage will be required to identify the new controlled area boundary before establishing uncontrolled access to the River Corridor lands. DOE/RL-2001-41 and DOE/RL-2001-36 will require minor administrative revisions to reflect the geographic change in the controlled waste management area boundary.

4.3 ENVIRONMENTAL AIR PERMITS

Unrestricted access to the River Corridor lands for recreational activities is assumed to meet the radioactive air emissions regulatory definition for the location of an MEI. Compliance calculations for Hanford's radioactive air emission units will require a revision to reflect an MEI location west of the Columbia River instead of the current location at Ringold, east of the river. While the results of preliminary calculations do not indicate the need to make any physical or administrative changes to the radioactive emission units on the Central Plateau, costs will be associated with updating the Hanford Site Air Operating Permit and Radioactive Air Emissions License, FF-01, to reflect the new MEI location.

For nonradioactive air emission units, where regulatory compliance was demonstrated through air dispersion modeling, public access to the River Corridor will drive the need to re-verify compliance using a new receptor location. Those emission units and their associated permits/approval orders are noted below:

- Bechtel National Incorporated:
 - DE02NWP-002, "River Protection Project Waste Treatment Plant Notice of Construction (NOC) Approval Order"
 - DE07NWP-004, "Criteria and Toxic Air Emissions Notice of Construction Application Approval Order, Waste Treatment and Immobilization Plant Construction Heaters and Dehumidifiers"
- CH2M HILL Plateau Remediation Company (CHPRC):
 - DE00NWP-002, "Air Emission Notice of Construction Approval for Drummed and Packed Waste Storage, Hanford Central Waste Complex (CWC)"
 - DE01NWP-002, "Notice of Construction for T Plant Complex", Rev. 1

- DE03NWP-002, “Notice of Construction and Approval Order for Waste Receiving and Processing (WRAP) Facility”
- Washington River Protection Solutions LLC (WRPS):
 - DE05NWP-001, “Non-Radioactive Air Emissions Notice of Construction Approval Order For Waste Retrieval Systems in Single-Shell Tank Farms,” Rev. 1
 - DE05NWP-002, “Criteria and Toxics Air Emissions Notice of Construction Application for Operations of Waste Retrieval Systems in Single Shell Tank Farms and the Hanford Single Shell Tank Categorical Retrieval Toxic Air Pollutant Emission Estimate of NOC Approval Order,” Rev. 2
 - DE07NWP-003, “Effluent Treatment Facility”, Rev. 1
 - DE11NWP-001, “Notice of Construction Application for Operations of New Ventilation Systems in 241-AP, SY, and AY/AZ Tank Farms and the NOC Approval Order.”
 - NOC 94-07, “Non-Radioactive Air Emissions Notice of Construction Permit Amendment for the Operation of Ventilation Systems in Various Hanford Tank Farms,” Amendment A, “241-AY and 241-AZ Ventilation Upgrades – increase in ammonia emission limit”
 - Pending NOC Approval Order for Core Sampler.

The Hanford Site Air Operating Permit will require revision to reflect the new receptor location used for demonstrating compliance and to incorporate the revised compliance information under the associated NOCs.

For WTP operations, a more formal evaluation of the recreational exposure scenario associated with potential future recreational activities in the River Corridor, would need to be completed to ensure that there are no unacceptable risks to the public. The evaluation would be incorporated in 24590-WTP-RPT-ENV-14-002.

4.4 RADIOLOGICAL CONTROLS

As discussed in Section 3.14, the release of real property within the River Corridor from radiological controls requires implementation of a clearance process under DOE O 458.1. The radiological clearance process is necessary to allow unfettered public access to the River Corridor lands. Because of the overall size of the potential public access areas (approximately 45,000 acres) and the history of radiological activities within those areas, the radiological release process will be a significant undertaking and will warrant careful planning.

4.5 SUMMARY OF ACTIONS TO FACILITATE ACCESS

Reconfiguring the controlled areas of the Hanford Site to facilitate access to the River Corridor would require both physical and administrative actions. Based on the programmatic discussions in previous sections, these actions include the following:

- Update the Hanford Site Air Operating Permit to reflect the new offsite receptor points for the nonradioactive air emission units that use dispersion modeling for TAP compliance.
- Update the Hanford Radioactive Air Emissions License (FF-01) to reflect the new MEI locations associated with proposed public access areas in the River Corridor.

- Evaluate the need to modify the Hanford Facility RCRA Permit related to facility description and security.
- Establish perimeter fencing along the proposed controlled area boundary with “No Trespassing” signage to meet security requirements under the Site Security Program, RCRA, CERCLA, and the HTSD.
- Install gates at appropriate intersections on the controlled boundary perimeter.
- Establish procedures for authorized personnel to access the gates.
- Modify the Wye Barricade interchange to provide public access around the barricade to Route 2S and the future eastern recreational facilities in the River Corridor.
- Revise 24590-WTP-ICD-MG-01-012, *ICD-12-Interface Control Document for Roads*, to remove the 2S/11A route as a commuting and construction route for the WTP.
- Revise DOE/RL-2001-41 to describe the new controlled-area boundary (changes to specific ICs for waste sites in the unrestricted area may be required, but are expected to be minimal).
- Revise applicable security procedures to reflect a new controlled area and general access areas.
- Perform radiological clearance of real property where public access will be authorized.

Note that these actions will facilitate public access to the River Corridor, but they do not “authorize” access.

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