

Relicensing Study 3.6.5

LAND USE INVENTORY

Study Report

**Northfield Mountain Pumped Storage Project (No. 2485)
and Turners Falls Hydroelectric Project (No. 1889)**

Prepared for:



Prepared by:



DECEMBER 2015

EXECUTIVE SUMMARY

FirstLight Hydro Generating Company (FirstLight) is the current licensee of the Northfield Mountain Pumped Storage Project (Northfield Mountain Project, FERC No. 2485) and the Turners Falls Hydroelectric Project (Turners Falls Project, FERC No. 1889). FirstLight has initiated with the Federal Energy Regulatory Commission (FERC, the Commission) the process of relicensing the Northfield Mountain and Turners Falls Projects using FERC's Integrated Licensing Process (ILP). The current licenses for Northfield Mountain and Turners Falls Projects were issued on May 14, 1968 and May 5, 1980, respectively, with both set to expire on April 30, 2018.

FirstLight filed a Revised Study Plan (RSP) on August 14, 2013 with FERC that included Study No. 3.6.5, *Land Use Inventory*. FERC's Study Plan Determination Letter (SPDL) dated September 13, 2013, approved Study No. 3.6.5 without modifications. The study objectives were to:

- Identify the current land uses within the Turners Falls Project and the Northfield Mountain Project boundaries;
- Identify the current land uses on lands abutting the Turners Falls Project and Northfield Mountain Project boundaries up to 200 feet;
- Identify current land use controls on lands within the Projects' boundaries and on lands abutting the Projects' boundaries up to 200 feet;
- Identify FirstLight owned lands adjacent to the Projects' boundaries; and
- Determine the appropriate land use designations for lands within the Turners Falls Project and Northfield Mountain Project boundaries. Designations will be based on a review of existing uses on lands within the Projects' boundaries and adjacent lands, the results of other resource studies, and land use controls such as local zoning.

The study area for the literature and aerial photography review included the land located within the Projects' boundaries and lands abutting the Projects' boundaries up to 200 feet.

The Licensee identified and mapped existing land uses within the Turners Falls Project and Northfield Mountain Project boundaries and lands abutting the Projects up to 200 feet beyond the Projects' boundaries utilizing the most recent publicly available land use database layers. The majority of the existing land use within the Turners Falls Project and Northfield Mountain Project boundaries consists of forested, recreation, and agricultural – crop lands. The majority of the existing land use within 200 feet of the Projects' boundaries consists of forested, developed, and agricultural – crop lands.

The Licensee reviewed existing land use controls, including local plans, ordinances, statutes, policies, and guidelines that may affect the use of and/or management of lands inside the Projects' boundaries to ensure that the proposed land use designations are consistent with the existing land use controls and local plans.

Using publicly available sources of information, the Licensee identified approximately 715 acres within the Projects' boundaries and within 200 feet of the Projects' boundaries that are subject to conservation restrictions or agricultural preservation restrictions. The Licensee used this information to determine whether the proposed land use designations are consistent with areas of conservation restrictions and agricultural preservation restrictions identified within the Projects' boundaries and within 200 feet of the Projects' boundaries.

The Licensee reviewed the results from other relicensing resources studies as appropriate. This information was used to refine the existing land use categories identified in the literature and aerial photography review. These resource studies included results from the field verification of National Wetland Inventory (NWI) mapped wetland types for Study No. 3.4.1 *Baseline Study Of Terrestrial Wildlife And Botanical Resources*

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([Kleinschmidt & GSE, 2015a](#)) and Study No. 3.5.1 *Baseline Inventory Of Wetland, Riparian And Littoral Habitat In The Turners Falls Impoundment, And Assessment Of Operational Impacts On Special-Status Species* ([Kleinschmidt & GSE, 2015c](#)). The results from Study No. 3.4.2 *Effects of Northfield Mountain Pumped Storage Development-Related Land Management Practices and Recreational Use on Terrestrial Habitats* ([Kleinschmidt & GSE, 2015b](#)) were reviewed to determine whether changes to the Licensee's existing Permit Program are needed to protect sensitive resources. Rare, threatened or endangered (RTE) wildlife species habitat and plants mapped in Study No. 3.5.1 and eligible or potentially eligible cultural sites identified in Study No. 3.7.1 *Phase IA (Reconnaissance) Archaeological Survey* ([Sara, et al., 2014a and 2014b](#)) will be incorporated into an overlay map of sensitive resources when these studies have been completed. The sensitive resources overlay will also include historic structures considered eligible for listing on the National Register of Historic Places (NRHP) identified in Study No. 3.7.2 *Historic Architectural Resources Survey & National Register Evaluation (MA, NH, VT)* ([GSE & TRC, 2014](#)) and Study No. 3.7.2 *Historic Architectural Resources Survey & National Register Evaluation Addendum* ([GSE & TRC, 2015d](#)). Because the overlay map identifies confidential site location information regarding RTE species habitat areas and eligible or potentially eligible archaeological resources, the sensitive areas overlay maps will be filed with FERC as privileged. The Licensee will take into account areas of erosion identified in Study No. 3.1.1 *2013 Full River Reconnaissance* ([S&A et al., 2014a](#)) and Study No. 3.1.2 *Northfield Mountain/Turners Falls Operations Impact on Existing Erosion and Potential Bank Instability* ([S&A et al., 2014b](#)) when permitting non-project uses of Project lands.

The Licensee developed proposed land use designations for lands within the Projects' boundaries that are generally the same as the existing land uses within the Projects' boundaries. No significant changes from existing land use categories were determined to be necessary based on a review of existing land use controls and literature and the results of relevant relicensing study results reviewed.

FirstLight has an established FERC-approved Permit Program through which it administers property interests, including non-project use of Project lands including lands it owns in fee, or in which it has an interest ([Howard, 2008](#)). Under its Permit Program it is FirstLight's policy to "protect the scenic, recreational, and other environmental values of the Project, consistent with safe, efficient operation", and consistent with the standard Land Use Articles in the current licenses for the Turners Falls and Northfield Mountain project licenses. The Licensee permits non-project uses of Project lands in accordance with the provisions of the FERC licenses. Non-project uses include camps within the Project boundaries, docks, and landscape and water withdrawals for abutters. In addition, FirstLight grants permission for use of Project land, on an as requested basis, for one-time short term events, such as athletic and horseback riding events.

The Licensee's management of lands within the Projects' boundaries has been consistent with the existing land use categories and been protective of sensitive resources at the Projects.

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LIST OF ABBREVIATIONS

APR	Agricultural Preservation Restriction
Commission	Federal Energy Regulatory Commission
CR	Conservation Restriction
ECP	Erosion Control Plan
FERC	Federal Energy Regulatory Commission
FirstLight	FirstLight Hydro Generating Company
ILP	Integrated Licensing Process
MADCR	Massachusetts Department of Conservation & Recreation
MassGIS	Massachusetts Geographic Information System
NAIP	National Agriculture Imagery Program 2014
NCED	National Conservation Easement Database
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NEE	New England Environmental
NLCD	National Land Cover Database
PAD	Pre-Application Document
PSP	Proposed Study Plan
ROW	Right-of-Way
RSP	Revised Study Plan
RTE	Rare, threatened, or endangered
S&A	Simons & Associates
SPDL	Study Plan Determination Letter

1 INTRODUCTION

FirstLight Hydro Generating Company (FirstLight) is the current licensee of the Northfield Mountain Pumped Storage Project (Northfield Mountain Project, FERC No. 2485) and the Turners Falls Hydroelectric Project (Turners Falls Project, FERC No. 1889). FirstLight has initiated with the Federal Energy Regulatory Commission (FERC, the Commission) the process of relicensing the Northfield Mountain and Turners Falls Projects using the FERC's Integrated Licensing Process (ILP). The current licenses for Northfield Mountain and Turners Falls Projects were issued on May 14, 1968 and May 5, 1980, respectively, with both set to expire on April 30, 2018.

As part of the ILP, FERC conducted a public scoping process during which various resource issues were identified. On October 31, 2012, FirstLight filed its Pre-Application Document (PAD) and Notice of Intent with the FERC. The PAD included FirstLight's preliminary list of proposed studies. On December 21, 2012, FERC issued Scoping Document 1 and preliminarily identified resource issues and concerns. On January 30 and 31, 2013, FERC held scoping meetings for the two Projects. FERC issued Scoping Document 2 on April 15, 2013.

FirstLight filed its Proposed Study Plan (PSP) on April 15, 2013 and, per the Commission regulations, held a PSP meeting at the Northfield Mountain Visitor Center on May 14, 2013. Thereafter, FirstLight held ten resource-specific study plan meetings to allow for more detailed discussions on each PSP and on studies not being proposed. On June 28, 2013, FirstLight filed with the Commission an Updated PSP to reflect further changes to the PSP based on comments received at the meetings. On or before July 15, 2013, stakeholders filed written comments on the Updated PSP. FirstLight filed a Revised Study Plan (RSP) on August 14, 2013 with FERC addressing stakeholder comments. Included in the RSP was Study No. 3.6.5, *Land Use Inventory*. FERC's Study Plan Determination Letter (SPDL) dated September 13, 2013, approved Study No. 3.6.5 without modifications.

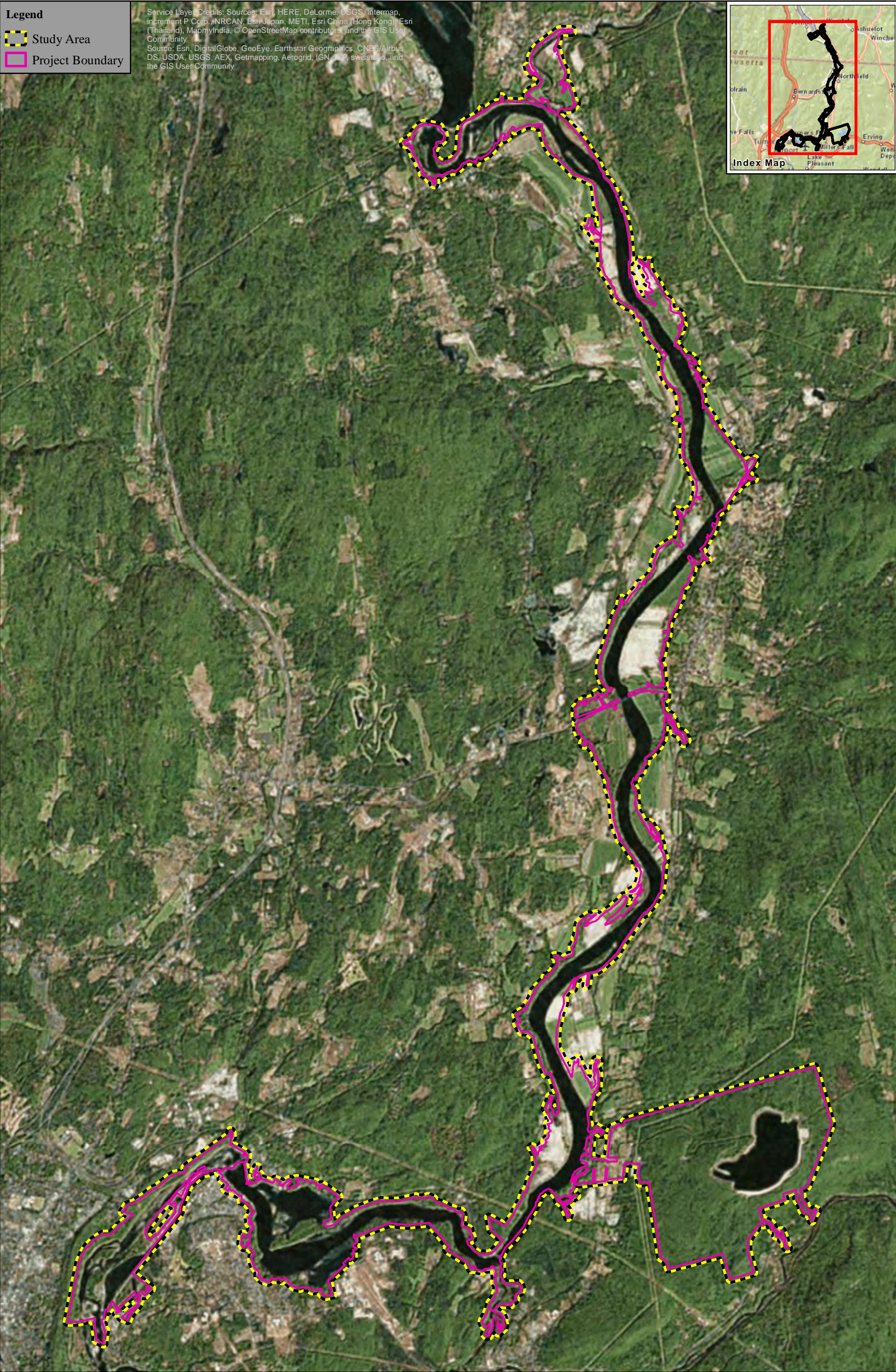
As stated in the Study Plan, the study objectives were to:

- Identify the current land uses within the Turners Falls Project and the Northfield Mountain Project boundaries;
- Identify the current land uses on lands abutting the Turners Falls Project and Northfield Mountain Project boundaries up to 200 feet;
- Identify current land use controls on lands within the Projects' boundaries and on lands abutting the Projects' boundaries up to 200 feet;
- Identify FirstLight owned lands adjacent to the Projects' boundaries; and
- Determine the appropriate land use designations for lands within the Turners Falls Project and Northfield Mountain Project boundaries. Designations will be based on a review of existing uses on lands within the Projects' boundaries and adjacent lands, the results of other resource studies, and land use controls such as local zoning.

The Study Plan also stated that the inventory would culminate in maps showing the existing land uses within the Projects' boundaries and up to 200 feet abutting the Projects' boundaries; a map showing lands owned by FirstLight up to 200 feet abutting the Projects' boundaries and existing locations of docks and water withdrawals; and a summary of the results, including the methodology used and the proposed land use designations and definitions, along with the percentage of the Projects' lands in each designation.

2 STUDY AREA

The study area ([Figure 2.0-1](#)) for the literature and aerial photography review included the land located within the Projects' boundaries and lands abutting the Projects' boundaries up to 200 feet.



Northfield Mountain Pumped Storage Project (No. 2485)
and Turners Falls Hydroelectric Project (No. 1889)

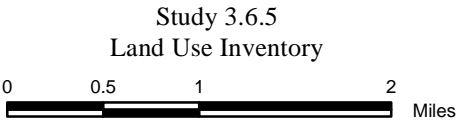


Figure 2.0-1
Land Use Inventory Study Area

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3 METHODS

As outlined in the RSP, the Land Use Inventory was comprised of three specific tasks: a literature and aerial photography review; development and application of proposed land use designations; and development of maps and a summary of results. The methods associated with each task are described in the following sections.

3.1 Literature and Aerial Photography Review

3.1.1 Identification and Mapping of Existing Land Uses

The Licensee identified existing land uses within the Turners Falls Project and Northfield Mountain Project boundaries and lands abutting the Projects up to 200 feet beyond the Projects' boundaries utilizing the most recent publicly available land use database layers from the National Land Cover Database (NLCD) ([Homer, et al., 2015](#)) and the Massachusetts Geographic Information System (MassGIS) ([MassGIS, 2005](#)). NLCD layers were utilized to identify land use categories for the Vermont and New Hampshire portion of the study area. MassGIS layers were utilized to identify land use categories for the Massachusetts portion of the study area. The land use polygon created by New England Environmental (NEE) for relicensing Study No. 3.1.1 2013 Full River Reconnaissance ([S&A et al., 2013](#)) was also reviewed with respect to the Turners Falls impoundment restoration sites.¹ As with the Land Use Inventory, Study No. 3.1.1 utilized the MassGIS database. The restoration sites were the only areas that were broken out by NEE as a new layer that was not provided in the MassGIS database. The land use category nomenclature of these datasets were combined to create a master list of 35 existing land use categories.

3.1.2 Aerial Photography Review

The Licensee reviewed existing, publicly available aerial photography to confirm land uses identified within the study area using NLCD layers and MassGIS layers. This publicly available aerial photography was obtained from the National Agriculture Imagery Program 2014 (NAIP). Any areas that were unclear from aerial photography were groundtruthed during other studies conducted for the relicensing of the Projects. There were a total of 10 areas where the land use was not clear from the aerial photography and thus was verified in the field during field work for Study No. 3.6.4 *Assessment of Day Use and Overnight Facilities Associated with Non-Motorized Boats* in 2014 ([GSE & TRC, 2015c](#)). The ten (10) areas include eight (8) dead end roads that were under tree cover, one (1) residential/open space area that was not clear as to its use, and one (1) area where camps/residences were under tree cover with no noticeable access roads.

3.1.3 Literature Review

The Licensee reviewed existing land use controls, including local plans, ordinances, statutes, policies, and guidelines that may affect the use of and/or management of lands inside the Projects' boundaries. Specifically, the Licensee reviewed the Open Space and Recreation Plans for Erving ([Erving Open Space Planning Committee and the Franklin Regional Council of Governments Planning Department, 2010](#)), Gill ([Gill Open Space and Recreation Committee and Franklin Regional Council of Governments Planning Department, 2011](#)), Greenfield ([Town of Greenfield Open Space and Recreation Committee, 2012](#)),

¹ In 1999, an Erosion Control Plan (ECP) was developed by Simons & Associates (S&A) to address riverbank erosion in the Turners Falls Impoundment. The ECP ([S&A, 1999](#)) was developed in response to concerns over riverbank erosion and pursuant to relevant articles of FERC licenses for the Turners Falls and Northfield Mountain Projects. The FERC-approved ECP identified 20 riverbank segments as priority sites to be considered for stabilization. Management measures for erosion control in the ECP included: restoration of eroded riverbank segments, preventative maintenance that will minimize or prevent future erosion, and maintenance and monitoring of the restored sites.

Montague ([Montague Open Space Planning Committee and Franklin Regional Council of Governments Planning Department, 2010](#)), and Northfield ([Northfield Open Space Committee, 2013](#)); Downtown Turners Falls Livability Plan ([Dodson & Finker, Landscape Architects and Planners, and Howard/Stein-Hudson Associates, 2013](#)); Community Development Plan for the Town of Gill ([Gill Community Development Planning Committee and the Franklin Regional Council of Governments, 2004](#)); Master Plan for Northfield ([Martha Lyon Landscape Architecture, LLC with Community Circle, Community Preservation Associates, and AECOM, 2014](#)); Master Plan for the Town of Hinsdale, New Hampshire ([Hinsdale Planning Board in Conjunction with the Southwest Region Planning Commission, 2003](#)); Sustainable Greenfield ([Vanasse Hangen Brustlin, Inc., 2014](#)); the Massachusetts Rivers Protection Act; the Massachusetts Department of Revenue Taxpayer's Guide to Classification and Taxation in Massachusetts for Forest Land, Recreational Land, and Agricultural or Horticultural Land (Chapters 61, 61A, and 61B) ([Massachusetts Department of Revenue Division of Local Services Property Tax Bureau, No Date](#)); Sustainable Franklin County - A Regional Plan for Sustainable Development ([Franklin Regional Council of Governments, No Date](#)); and the Vernon, Vermont Town Plan ([Town of Vernon, 2013](#)). In connection with Study No. 3.6.1 *Recreation Use/User Contact Survey* ([GSE & TRC, 2015a](#)), the towns of Erving, Gill, Greenfield, Montague, Northfield, Hinsdale, and Vernon were contacted to confirm that there had been no updates to the plans since they were originally obtained in 2014. The Licensee used this information in the development of the proposed land use designations to ensure that the proposed designations are consistent with the existing land use controls, existing local plans, and existing land uses.

3.1.4 Review of Non-Project Uses of Project Lands

The Licensee has an established FERC-approved Permit Program through which it administers non-project uses of Project lands including lands it owns in fee, or in which it has an interest ([Howard, 2008](#)). Under its Permit Program it is the Licensee's policy to "protect the scenic, recreational, and other environmental values of the Project, consistent with safe, efficient operation", and consistent with the standard Land Use Articles in the current licenses for the Turners Falls and Northfield Mountain project licenses. The location and type of non-project uses of Project lands were identified. In addition, the existing locations of docks and water withdrawals were mapped ([Figure 4.4-2](#)).

3.1.5 Review of Relicensing Resource Study Results

The Licensee reviewed the results from other relicensing resources studies as available and applicable. These studies included Study No. 3.1.1 *2013 Full River Reconnaissance* ([S&A et al., 2014a](#)); Study No. 3.1.2 *Northfield Mountain/Turners Falls Operations Impact on Existing Erosion and Potential Bank Instability* ([S&A et al., 2014b](#)); Study No. 3.4.1 *Baseline Study Of Terrestrial Wildlife And Botanical Resources* ([Kleinschmidt & GSE, 2015a](#)); Study No. 3.4.2 *Effects of Northfield Mountain Pumped Storage Development-Related Land Management Practices and Recreational Use on Terrestrial Habitats* ([Kleinschmidt & GSE, 2015b](#)); Study No. 3.5.1 *Baseline Inventory Of Wetland, Riparian And Littoral Habitat In The Turners Falls Impoundment, And Assessment Of Operational Impacts On Special-Status Species* ([Kleinschmidt & GSE, 2015c](#)); Study No. 3.7.1 *Phase IA (Reconnaissance) Archaeological Survey* ([Sara, et al., 2014a and 2014b](#)); Study No. 3.7.2 *Historic Architectural Resources Survey & National Register Evaluation (MA, NH, VT)* ([GSE & TRC, 2014](#)), and Study No. 3.7.2 *Historic Architectural Resources Survey & National Register Evaluation Addendum* ([GSE & TRC, 2015d](#)). These study results were used to supplement the existing land use categories within the Project's boundaries and considered in the development of the proposed land use designations. National Wetland Inventory (NWI) mapped wetland types were field verified and mapped and described in Study No. 3.5.1. These mapped wetlands were used to refine the existing land use categories. The results from Study No. 3.4.2 were reviewed to determine whether changes to the Licensee's existing Permit Program are needed to protect sensitive resources. In addition, an overlay map of sensitive resources described in Section 3.2 including RTE species habitat, areas within the Projects' boundaries that are considered sensitive for the presence of potentially eligible archaeological resources, and historic structures considered eligible for listing on the NRHP will

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be developed from the results from Study Nos. 3.4.1, 3.5.1, 3.7.1, and 3.7.2 once the mapping for those studies has been completed. The Licensee will take into account areas of erosion identified in Study Nos. 3.1.1 and 3.1.2 when permitting non-project uses of Project lands.

3.1.6 Review of Conservation Easements within 200 feet of the Project Boundaries

Using publicly available sources of information, the Licensee identified lands within 200 feet of the Projects' boundaries that are subject to conservation easements. Although not required by the RSP, the Licensee also reviewed publicly available sources of information to identify conservation easements on lands within the Projects' boundaries. This information was obtained from the MassGIS and from the National Conservation Easement Database (NCED). The Licensee also searched online databases and mapping tools available on the Internet for land trusts and land conservation organizations working in vicinity of the Projects in Massachusetts, New Hampshire, and Vermont. These included the Franklin Land Trust, Green Mountain Conservancy, Massachusetts Land Trust Coalition, Monadnock Conservancy, Mount Grace Land Conservation Trust, New England Forestry Foundation, New Hampshire Division of Forests and Lands, New Hampshire Land Trust Coalition, New Hampshire Office of Energy and Planning Conservation Land Stewardship Program, Northeast Wilderness Trust, Society for the Protection of New Hampshire Forests, The Nature Conservancy, The Trust for Public Land, Trustees of Reservations, USDA Natural Resources Conservation Service, Vermont Land Trust, and Vermont River Conservancy.

The Licensee used this information to determine whether the proposed land use designations are consistent with areas of conservation restrictions, agricultural preservation restrictions, and conservation easements identified within the Projects' boundaries and within 200 feet of the Projects' boundaries.

3.2 Development and Application of Land Use Designations

Based on the work completed in [Section 3.1](#), the Licensee developed proposed land use designations for lands within the Projects' boundaries that are generally consistent with existing land uses within the Projects' boundaries and the existing land uses abutting the Project's boundaries. The Licensee developed maps depicting the proposed land use designations. In addition, once the mapping for the aforementioned relicensing studies has been completed, an overlay map of sensitive resources including RTE species habitat, areas within the Projects' boundaries that are considered sensitive for the presence of potentially eligible archaeological resources, and historic structures considered eligible for listing on the NRHP will be developed. Because the overlay map identifies confidential site location information regarding RTE species habitat areas and areas within the Projects' boundaries that are considered sensitive for the presence of potentially eligible archaeological resources, the sensitive areas overlay maps will be filed with FERC as privileged.

4 STUDY RESULTS AND DISCUSSION

4.1 Existing Land Uses

The 35 existing land use categories identified within the study area were consolidated into nine land use categories as shown in [Table 4.1-1](#). The Licensee grouped similar land use categories based on land cover type and the land cover definition as defined in the data sources. [Figure 4.1-1](#) and [Table 4.1-2](#) depict the application of the nine consolidated existing land use categories to lands within the Projects' boundaries and within 200 feet of the Projects' boundaries.

Below is a description of the nine consolidated land use categories that occur within the Projects' boundaries and up to 200 feet of the Projects' boundaries:

- **Agricultural – Crops:** generally tilled land used to grow row crops. Boundaries follow the shape of the fields and include associated buildings (e.g. barns). This category also includes turf farms that grow sod.
- **Agricultural – Pasture/Grass:** Fields and associated facilities (barns and other outbuildings) used for animal grazing and for the growing of grasses for hay.
- **Natural/Undeveloped:** Vacant land, idle agriculture, rock outcrops, and barren areas. Vacant land is not maintained for any evident purpose and it does not support large plant growth.
- **Developed:** areas with a mixture of constructed materials and vegetation that is mostly in the form of grass.
- **Forested:** areas where tree canopy covers at least 50% of the land. Both coniferous and deciduous forests belong to this class.²
- **Shrub/Scrub:** predominantly shrub cover, and some immature trees not larger or dense enough to be categorized as forested. It also includes areas that are more permanently shrubby.
- **Wetland:** Areas of vegetation, where the soil or substrate is periodically saturated with or covered with water.
- **Open Water:** areas of open water.
- **Recreation:** Lands managed for developed public recreational facilities and activities. This includes recreational sites described in the report for Study No. 3.6.2 *Recreation Facilities Inventory and Assessment Addendum* ([GSE & TRC, 2015b](#)) and recreation facilities managed by private landowners.³

² The Licensee notes that any forested areas are potential habitat for the Northern long-eared bat, which was recently listed as threatened under the Endangered Species Act.

³ Recreation facilities managed by private landowners are the Turners Falls Rod and Gun Club, the Franklin County Boat Club, and Turners Falls Schuetzen Verein.

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Table 4.1-1 Consolidation of Existing Land Use Categories

Existing Land Use Categories (2011 Categories)	Consolidated Existing Land Use Categories
Agricultural Crops (NLCD)	Agricultural – Crops
Cropland (MassGIS)	
Agricultural – Pasture/Grass (NLCD)	Agricultural – Pasture/Grass
Pasture (MassGIS)	
Barren Land – Rock/Sand/Clay (NLCD)	Natural/Undeveloped
Restored ¹ (NEE)	
Open Land (MassGIS)	
Cemetery (MassGIS)	
Commercial (MassGIS)	Developed
Developed (NLCD)	
High Density Residential (MassGIS)	
Industrial (MassGIS)	
Junkyard (MassGIS)	
Low Density Residential (MassGIS)	
Marina (MassGIS)	
Medium Density Residential (MassGIS)	
Multi-Family Residential (MassGIS)	
Nursery (MassGIS)	
Orchard (MassGIS)	
Powerline/Utility (MassGIS)	
Transitional (MassGIS)	
Transportation (MassGIS)	
Urban Public/Institutional (MassGIS)	
Very Low Density Residential (MassGIS)	
Waste Disposal (MassGIS)	
Forest (MassGIS & NLCD)	Forested
Open Water (NLCD)	Open Water
Water (MassGIS)	Wetland
Forested Wetland (MassGIS)	
Non-Forested Wetland (MassGIS)	
Wetland (NLCD)	
Brushland/Successional (MassGIS)	Shrub/Scrub
Shrub/Scrub (NLCD)	
Participation Recreation (MassGIS)	Recreation
Water-Based Recreation (MassGIS)	

¹ Restored refers to the restored riverbank segments implemented under the ECP.

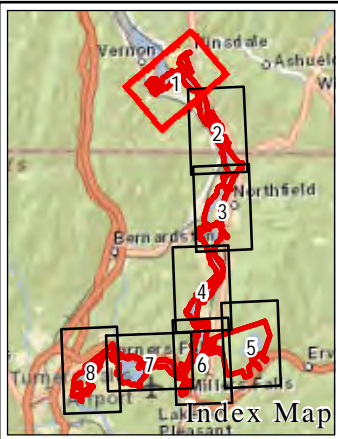
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Table 4.1-2 Existing Land Use within the Projects' Boundaries and within 200 Feet of the Projects' Boundaries

Consolidated Existing Land Use Categories	No. of Acres within the Projects' Boundaries	% of Land within the Projects' Boundaries	No. of Acres within 200 ft. of the Projects' Boundaries	% of Land within 200 ft. of the Projects' Boundaries
Agricultural – Crops	1,010 ¹	13.9	330	17.0
Agricultural – Pasture/Grass	37	0.5	31	1.6
Natural/Undeveloped	35	0.5	8	0.4
Developed	333	4.6	422	21.7
Forested	951	13.1	1,067	55.0
Open Water	2647	36.5	25	1.3
Wetland	396	5.5	23	1.2
Shrub/Scrub	1	0.0	4	0.2
Recreation	1,835 ²	25.3	32	1.6
Total	7,246	100	1,942	100

¹ The majority of the agricultural cropland within the Projects' boundaries is on lands, which the Licensee does not own in fee.

² Approximately 1,673 of these acres are the Northfield Mountain Tour and Trail Center.



Legend

Project Boundary

Study Area

LAND USE

Agricultural - Crops

Agricultural - Pasture/Grass

Forested

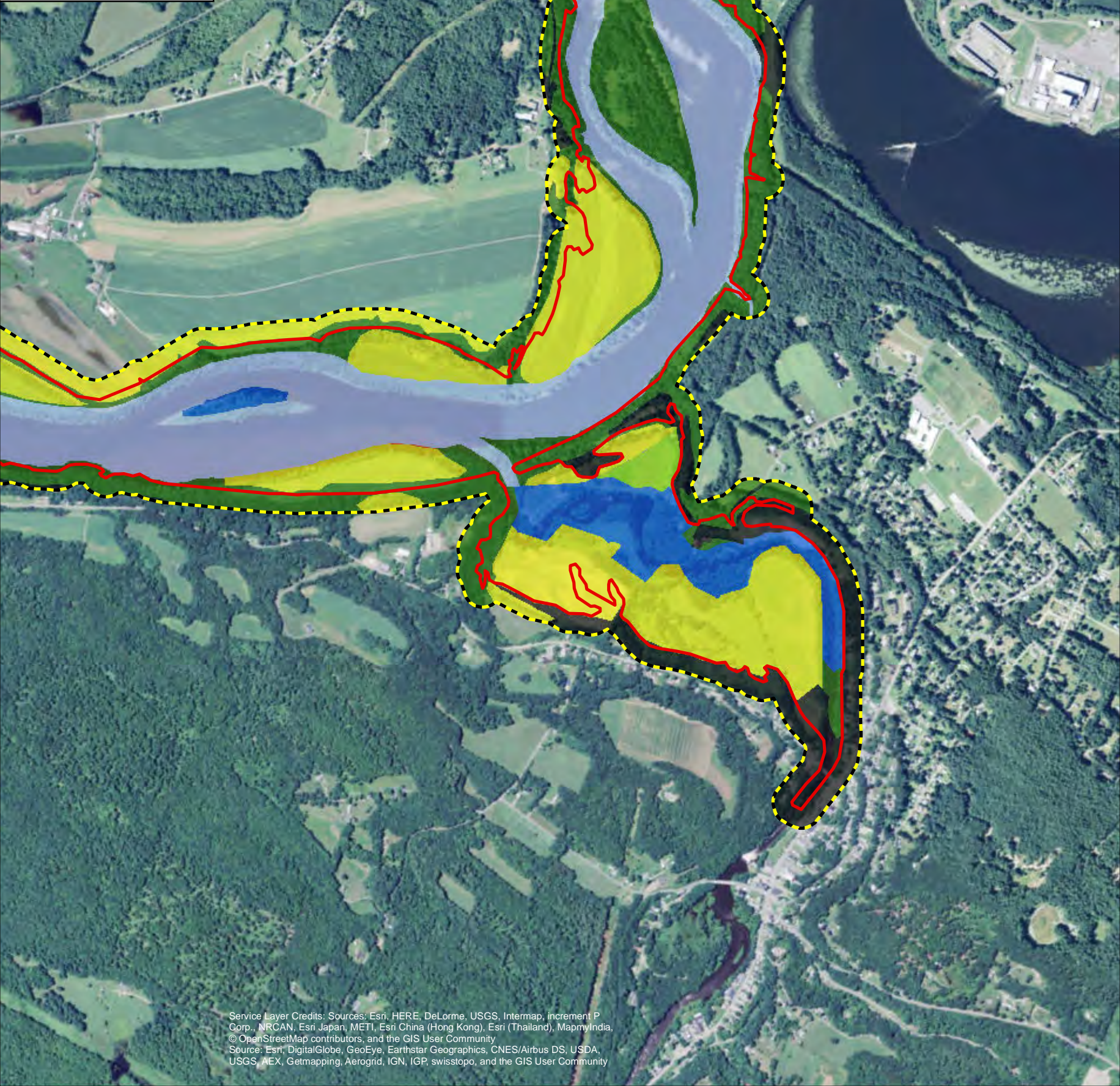
Natural/Undeveloped

Open Water

Recreation

Shrub/Scrub

Wetland



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

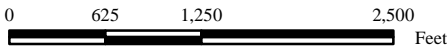
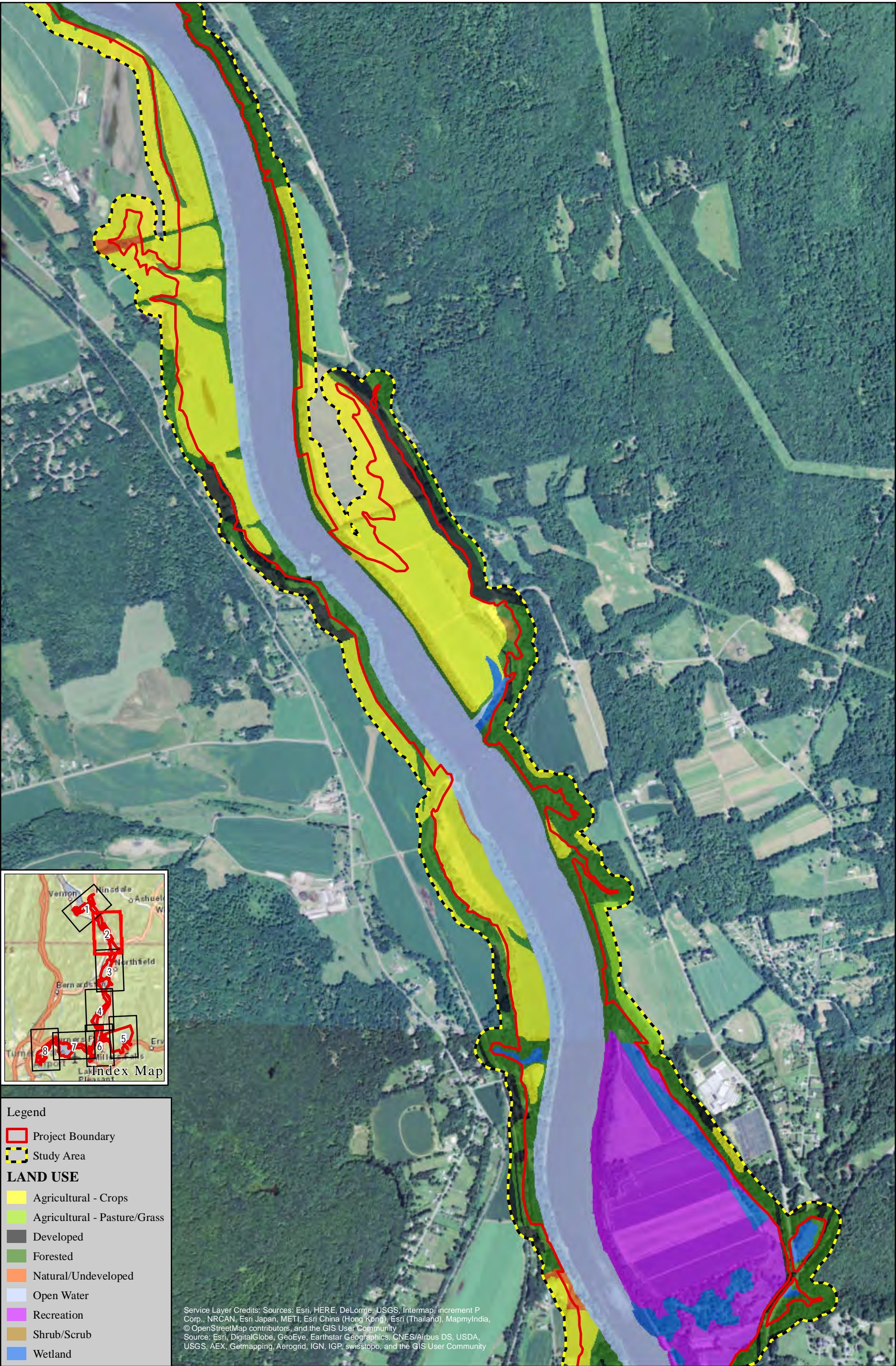


Figure 4.1-1 Map 1 of 8
Existing Land Uses within the Projects' Boundaries
and within 200 Feet of the Projects' Boundaries



Legend

Project Boundary

Study Area

LAND USE

Agricultural - Crops

Agricultural - Pasture/Grass

Developed

Forested

Natural/Undeveloped

Open Water

Recreation

Shrub/Scrub

Wetland

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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

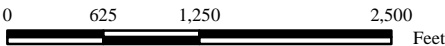
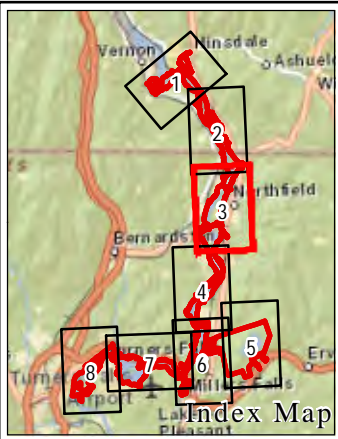


Figure 4.1-1 Map 2 of 8
Existing Land Uses within the Projects' Boundaries
and within 200 Feet of the Projects' Boundaries



Legend

Project Boundary

Study Area

LAND USE

Agricultural - Crops

Agricultural - Pasture/Grass

Developed

Forested

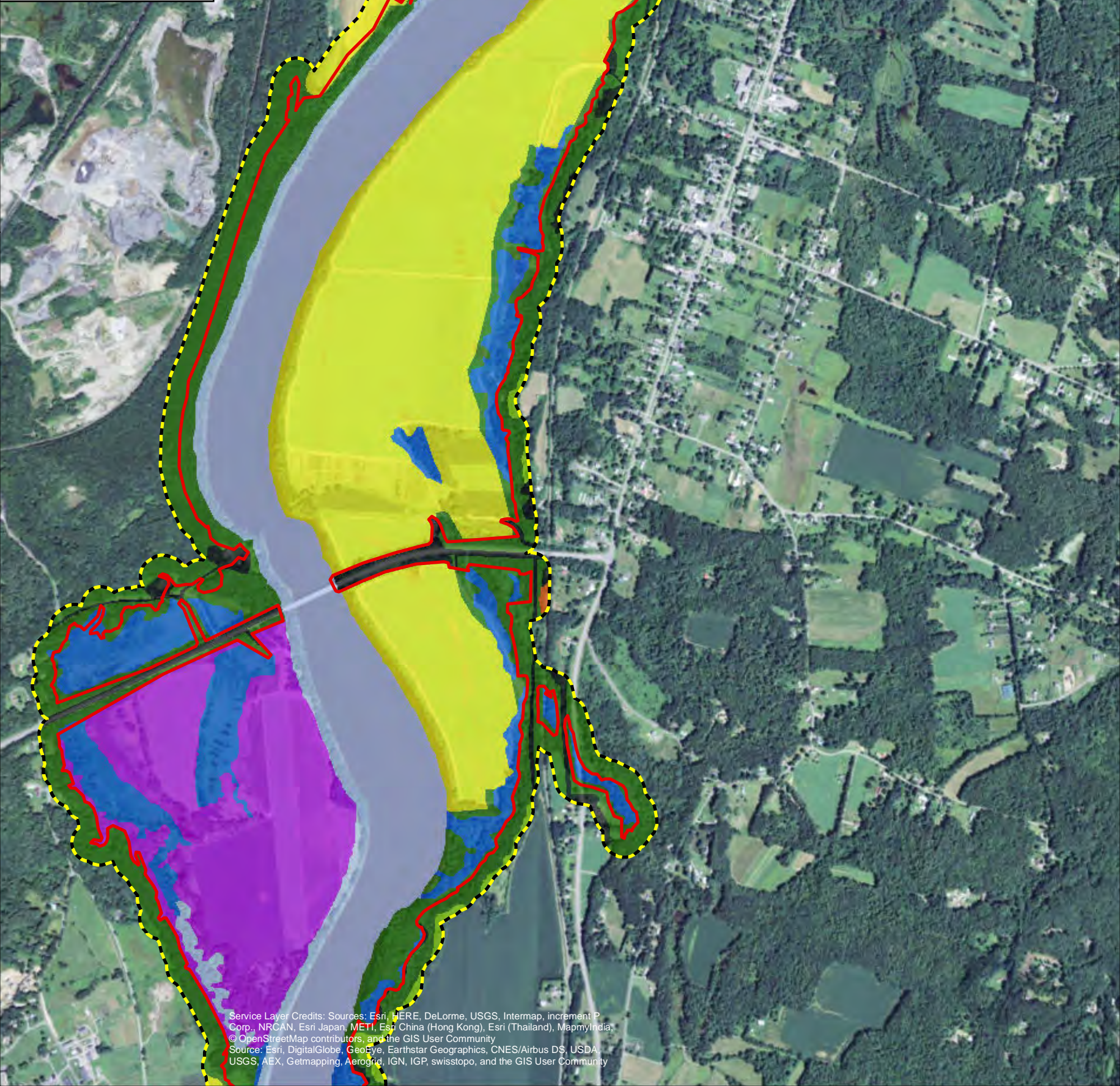
Natural/Undeveloped

Open Water

Recreation

Shrub/Scrub

Wetland



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Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

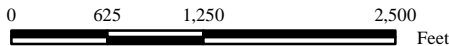
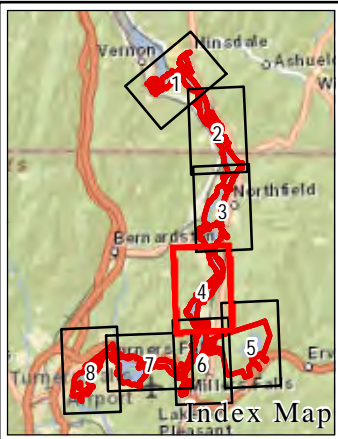


Figure 4.1-1 Map 3 of 8
Existing Land Uses within the Projects' Boundaries
and within 200 Feet of the Projects' Boundaries



Legend

Project Boundary

Study Area

LAND USE

Agricultural - Crops

Agricultural - Pasture/Grass

Developed

Forested

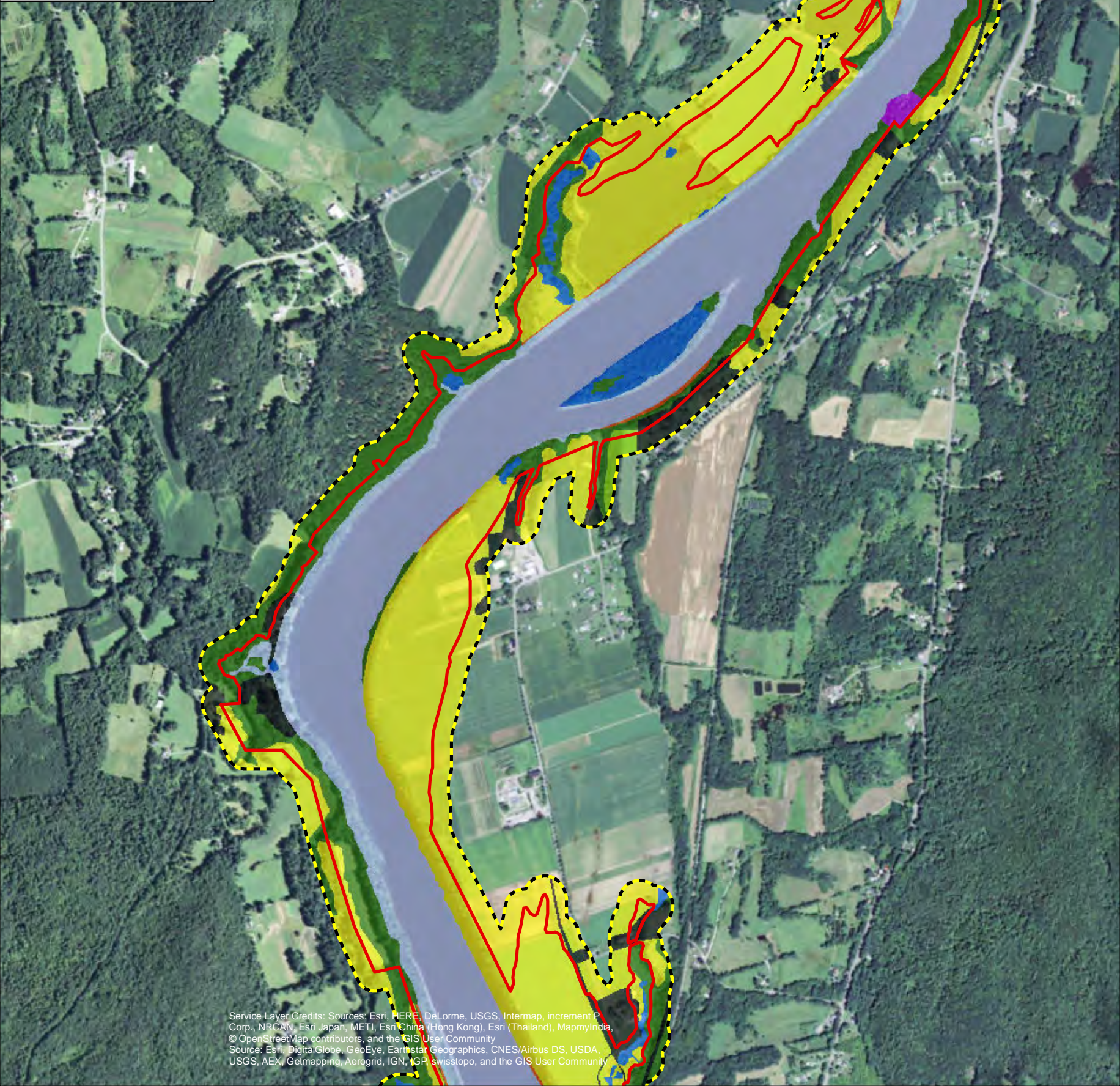
Natural/Undeveloped

Open Water

Recreation

Shrub/Scrub

Wetland



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Study 3.6.5
Land Use Inventory

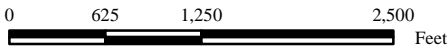
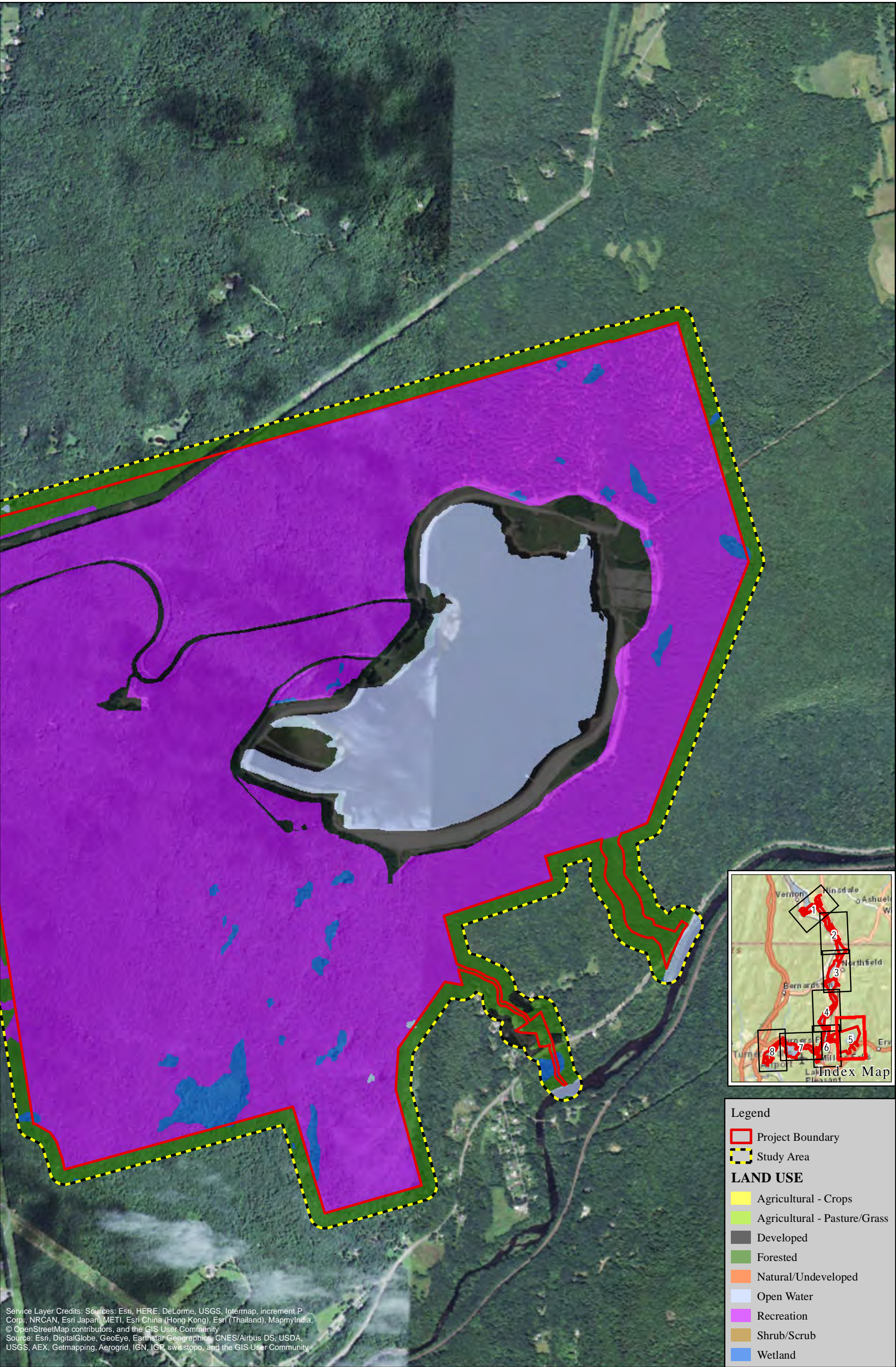
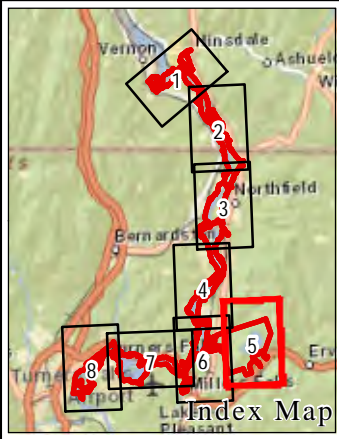


Figure 4.1-1 Map 4 of 8
Existing Land Uses within the Projects' Boundaries
and within 200 Feet of the Projects' Boundaries



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Legend	
	Project Boundary
	Study Area
LAND USE	
	Agricultural - Crops
	Agricultural - Pasture/Grass
	Developed
	Forested
	Natural/Undeveloped
	Open Water
	Recreation
	Shrub/Scrub
	Wetland



FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

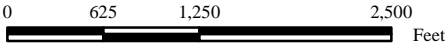
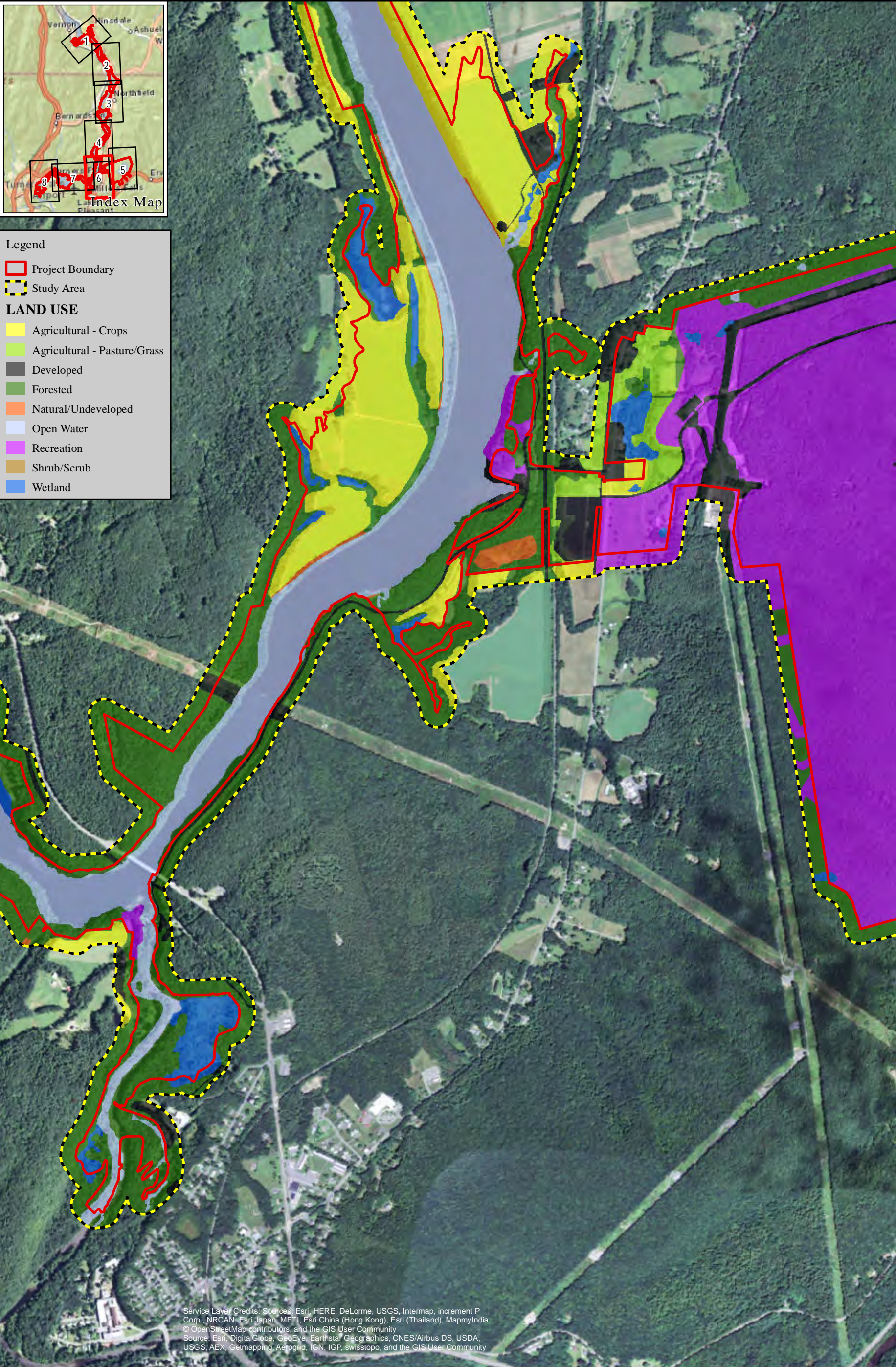
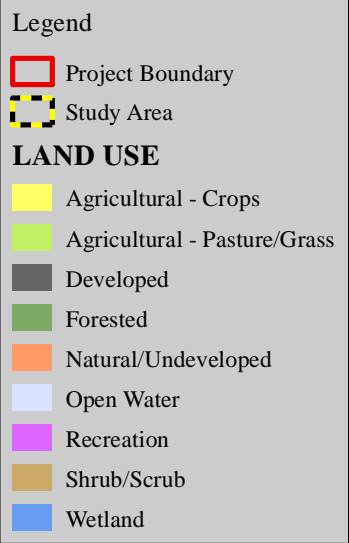
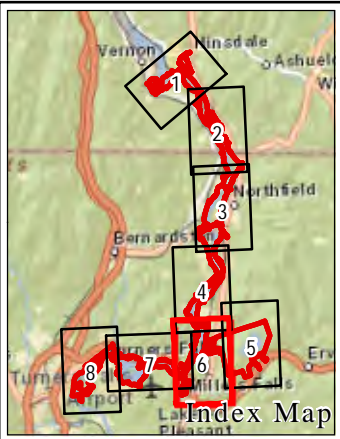


Figure 4.1-1 Map 5 of 8
Existing Land Uses within the Projects' Boundaries
and within 200 Feet of the Projects' Boundaries

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Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

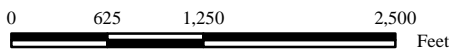
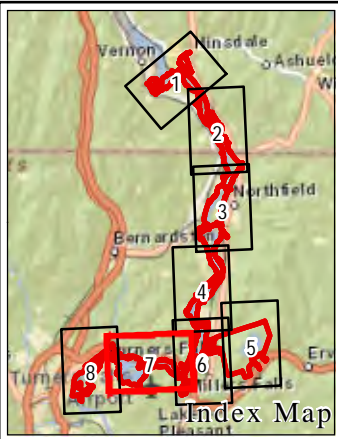


Figure 4.1-1 Map 6 of 8
Existing Land Uses within the Projects' Boundaries
and within 200 Feet of the Projects' Boundaries



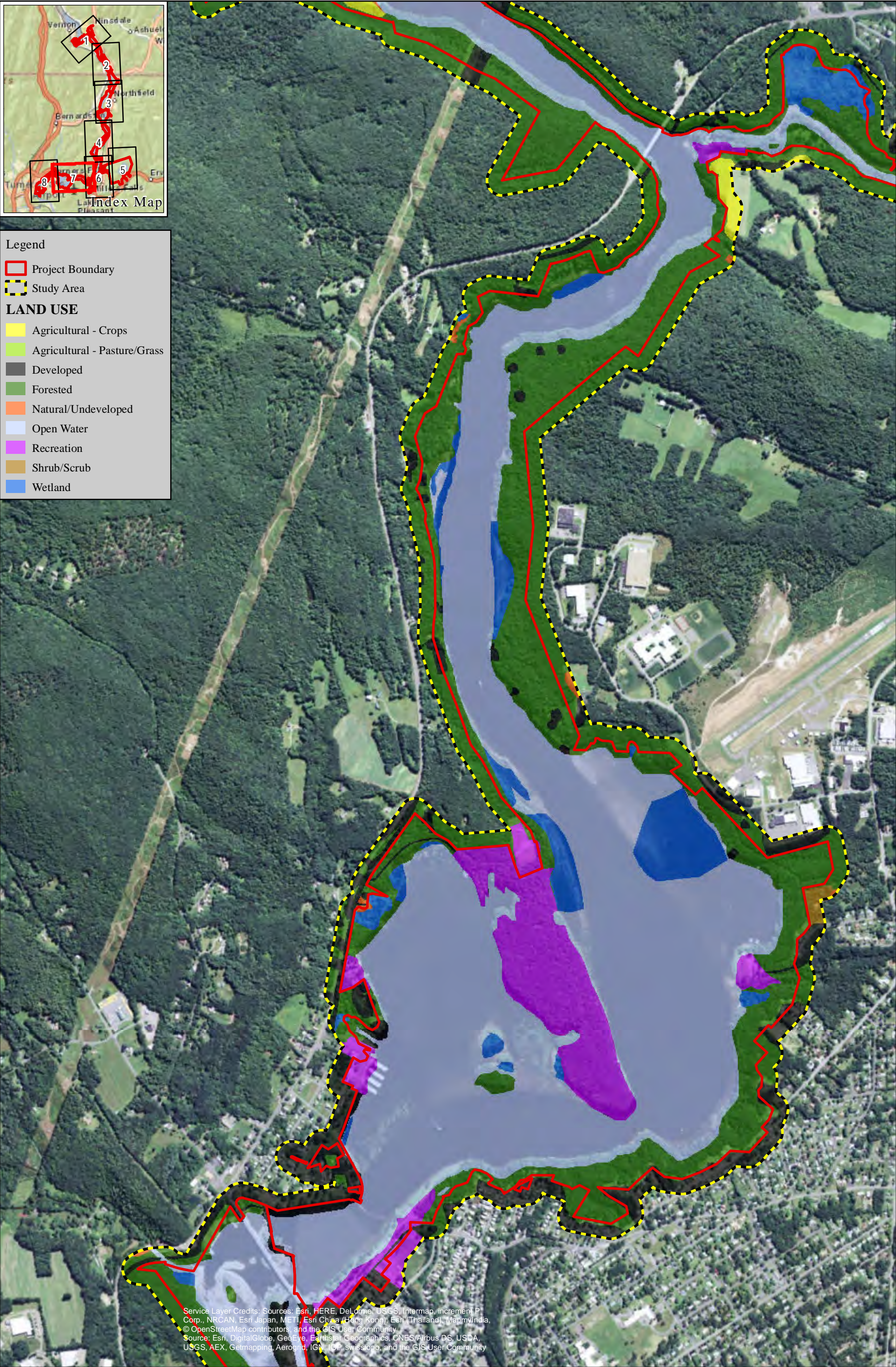
Legend

Project Boundary

Study Area

LAND USE

- Agricultural - Crops
- Agricultural - Pasture/Grass
- Developed
- Forested
- Natural/Undeveloped
- Open Water
- Recreation
- Shrub/Scrub
- Wetland



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Study 3.6.5
Land Use Inventory

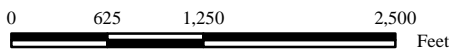
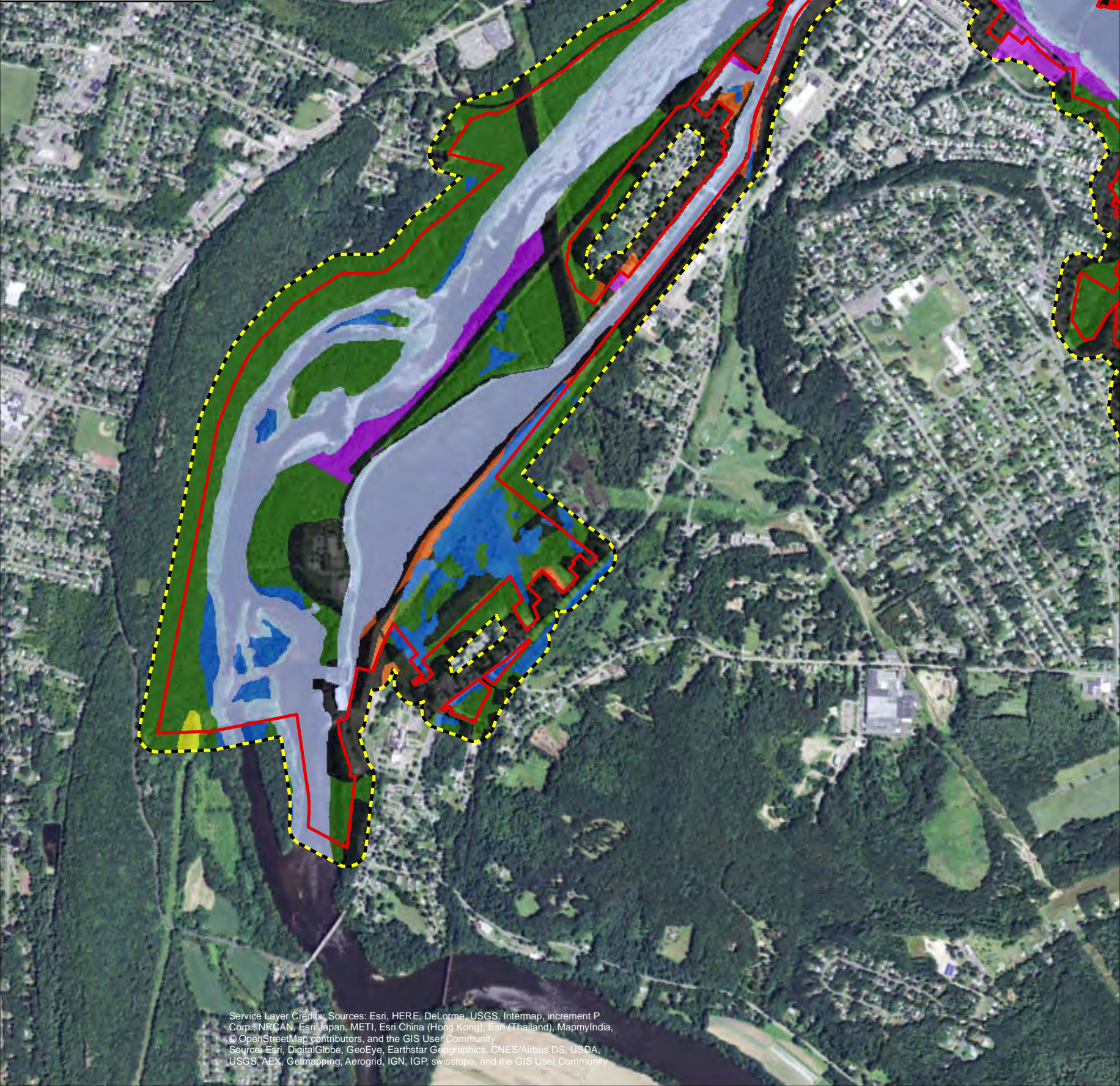
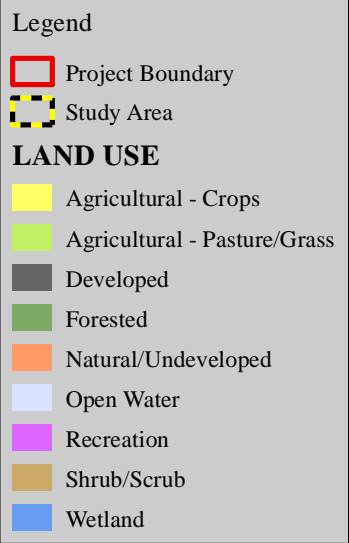
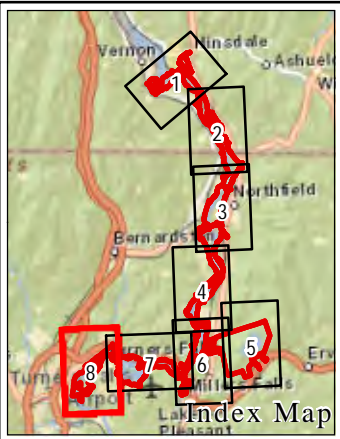


Figure 4.1-1 Map 7 of 8
Existing Land Uses within the Projects' Boundaries
and within 200 Feet of the Projects' Boundaries



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Study 3.6.5
Land Use Inventory

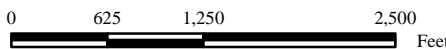


Figure 4.1-1 Map 8 of 8
Existing Land Uses within the Projects' Boundaries
and within 200 Feet of the Projects' Boundaries

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4.2 Conservation Easements within the Projects' Boundaries and within 200 feet of the Projects' Boundaries

Using publicly available information as described in [Section 3.1.6](#), the Licensee also identified several different types of protections placed on lands within the Projects' boundaries and within 200 feet of the Projects' boundaries (see [Figure 4.2-1](#) and [Table 4.2-1](#)). These include agricultural preservation restrictions and conservation restrictions. [Table 4.2-2](#) identifies the purpose of the conservation protections.

A conservation restriction is a legally binding agreement between a landowner (grantor) and a holder (grantee)—usually a public agency or a private land trust—whereby the grantor agrees to limit the use of his/her property by forfeiting interests in the land (development being one type of interest) for the purpose of protecting certain conservation values ([Northfield Open Space Committee, 2013](#) and [Montague Open Space Planning Committee and Franklin Regional Council of Governments Planning Department, 2010](#)). The conservation restriction may run for a period of years or in perpetuity, and is recorded at the Registry of Deeds. There are several types of conservation restrictions. Some conservation restrictions protect specific resources, such as recreation, wildlife habitat or surface water.

Actively farmed land with prime soils or soils of statewide importance may be eligible for enrollment in Massachusetts Agricultural Preservation Restriction (APR) Program ([Northfield Open Space Committee, 2013](#) and [Montague Open Space Planning Committee and Franklin Regional Council of Governments Planning Department, 2010](#)). The APR program purchases development rights and attaches a restriction to the deed, which legally bars development, keeping land permanently available for agriculture.

According to the MassGIS, there are 10 grantors of conserved land either within the Projects' boundaries or within 200 feet of the Projects' boundaries. These lands total approximately 715 acres. Parcels are grouped by grantor in [Table 4.2-1](#). The search of the National Conservation Easement Database and a search of online databases and mapping tools available on the Internet for land trusts and land conservation organizations working in vicinity of the Projects in Massachusetts, New Hampshire, and Vermont did not identify any additional conserved lands within the Projects' boundaries or within 200 feet of the Projects' boundaries in New Hampshire, Vermont, or Massachusetts.

LAND USE INVENTORY

Table 4.2-1 Conservation Protections within the Projects' Boundaries and within 200 Feet of the Projects' Boundaries

Site Name	Type of Protection	Acres Conserved within the Projects' Boundaries	Acres Conserved within 200 feet of the Projects' Boundaries
Bennett Meadows Wildlife Management Area	Lease Holding ¹	181.71	18.16
Connecticut River Greenway State Park ²	Conservation Restriction (CR), Right-of-Way (ROW), Easement	32.07	137.55
French-Samuels CR	CR	0.24	5.92
Vern-Mont Farm	Agricultural Preservation Restriction (APR)	0.66	5.79
Four Star Farms APR	APR	38.77	21.73
Split River Farm	APR	118.20	39.13
Roberts Farm APR	APR	0.00	2.29
Storrows Cold Spring Farm APR	APR	0.44	14.56
Urgiel Farm APR	APR	15.42	20.41
Nourse Farms APR	APR	26.18	35.80

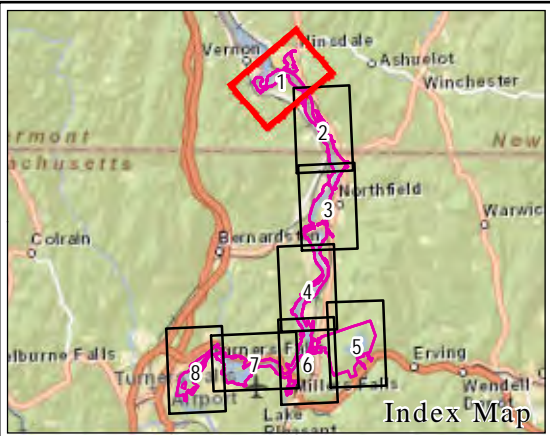
¹ Identified as Lease Holding in MassGIS.

² The Connecticut River Greenway State Park connects open spaces, parks, scenic vistas, and archaeological and historic sites along the length of the Connecticut River as it passes through Massachusetts. The Connecticut River Greenway State Park permanently protects over 12 miles of shoreline and is comprised of many parcels owned by private landowners over which MADCR holds an an easement, right-of-way, or conservation restriction.

(<http://www.mass.gov/eea/agencies/dcr/massparks/region-west/connecticut-river-greenway-state-park.html>).

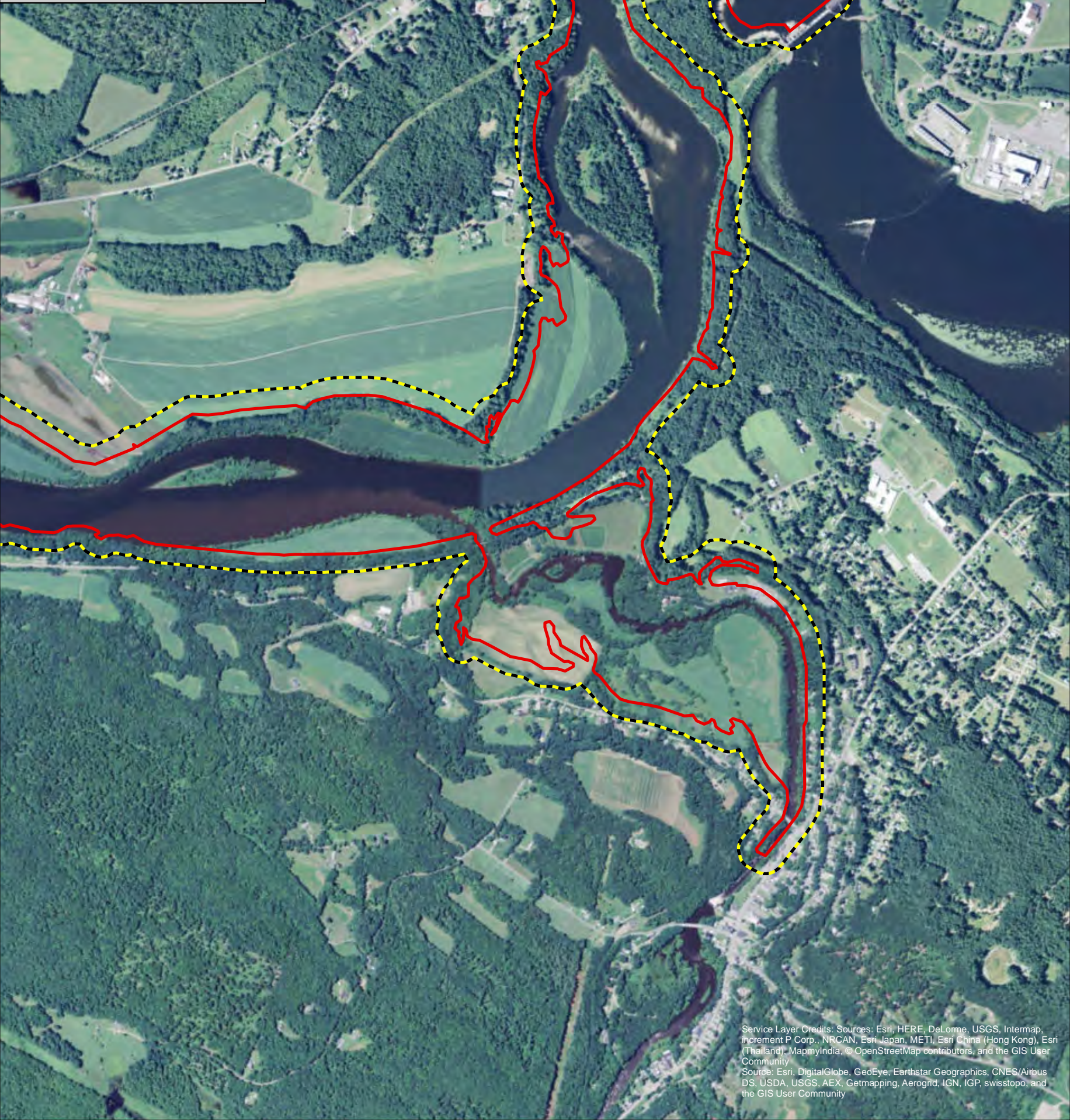
Table 4.2-2 Purpose of Conservation Protections within the Projects' Boundaries and within 200 Feet of the Projects' Boundaries

Purpose of Protection	Acres Conserved within the Projects' Boundaries	% Land Conserved within the Projects' Boundaries	Acres Conserved within 200 feet of the Projects Boundaries	% Land Conserved within 200 feet of the Projects Boundaries
Wildlife Management	181.71	2.5%	18.16	0.9%
Recreation	32.07	0.4%	137.55	7.1%
Agriculture	199.67	2.8%	139.71	7.2%
Natural, Undeveloped, and Scenic	0.24	0.0%	5.92	0.3%
Total	413.69	5.7%	301.34	15.5%



Legend

- Study Area
- Project Boundary
- Agricultural Protection Areas
- Wildlife Management Protection Areas
- Recreation Protection Areas
- Natural, Undeveloped, and Scenic Protection Areas



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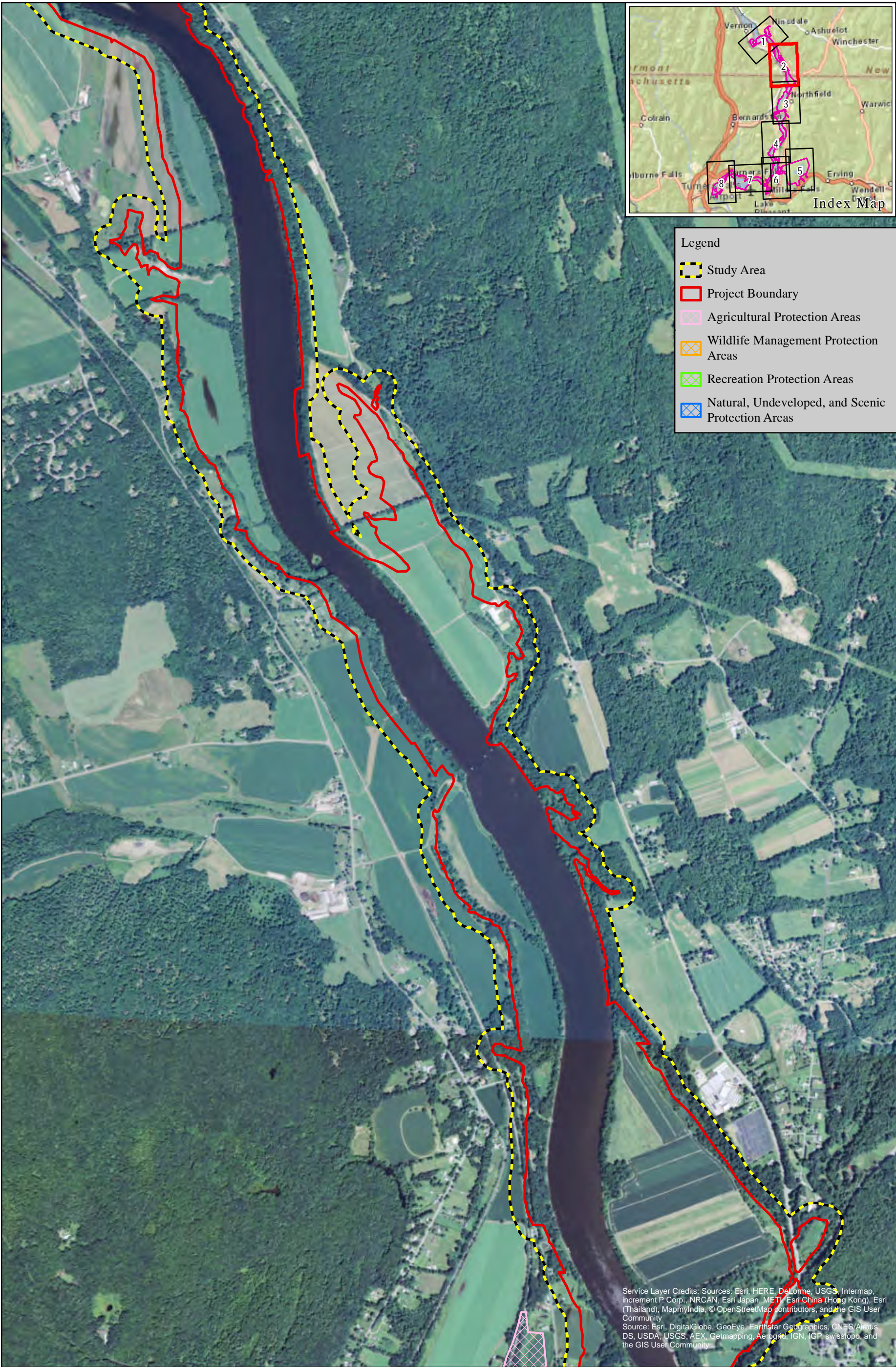


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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.2-1 Map 1 of 8
Conservation Protections within the Projects' Boundaries and within 200 Feet of the Projects' Boundaries



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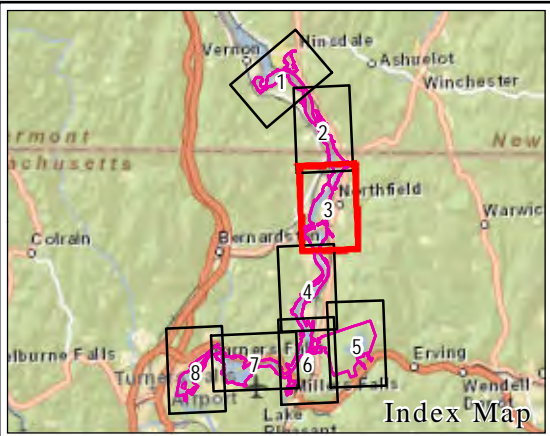
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Study 3.6.5
Land Use Inventory

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Feet

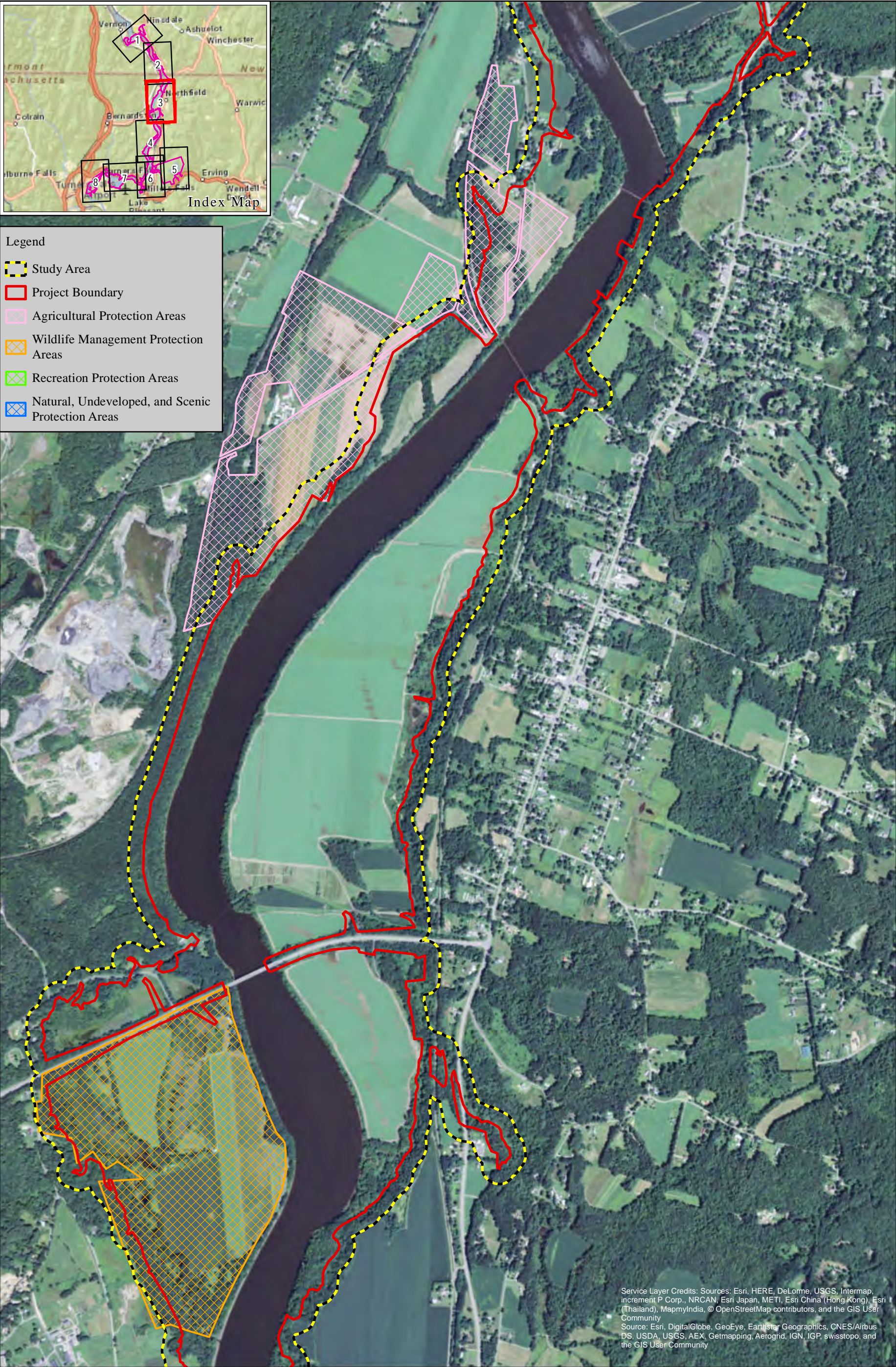
Figure 4.2-1 Map 2 of 8
Conservation Protections within the Projects'
Boundaries and within 200 Feet of the
Projects' Boundaries

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Legend

- Study Area
- Project Boundary
- Agricultural Protection Areas
- Wildlife Management Protection Areas
- Recreation Protection Areas
- Natural, Undeveloped, and Scenic Protection Areas



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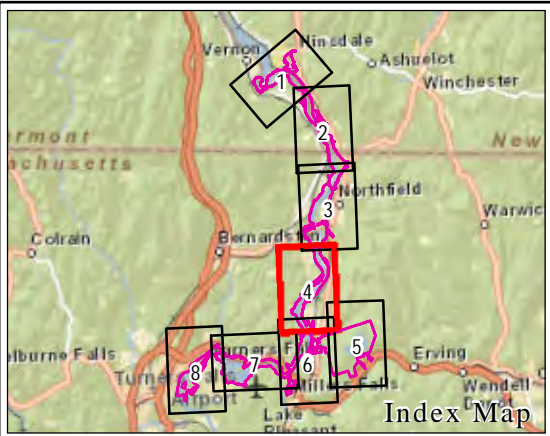


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Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

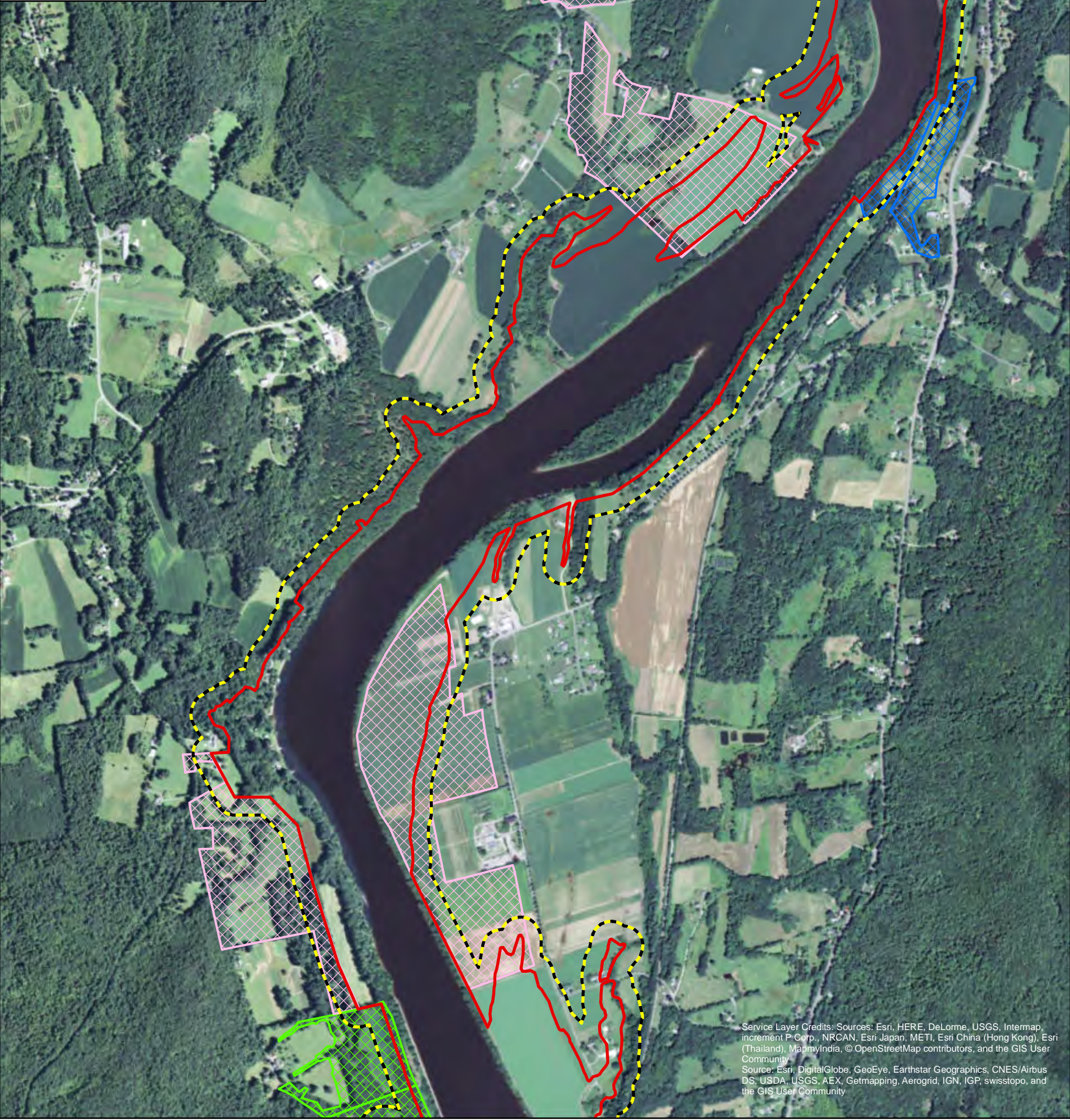
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Feet

Figure 4.2-1 Map 3 of 8
Conservation Protections within the Projects' Boundaries and within 200 Feet of the Projects' Boundaries



Legend

- Study Area
- Project Boundary
- Agricultural Protection Areas
- Wildlife Management Protection Areas
- Recreation Protection Areas
- Natural, Undeveloped, and Scenic Protection Areas



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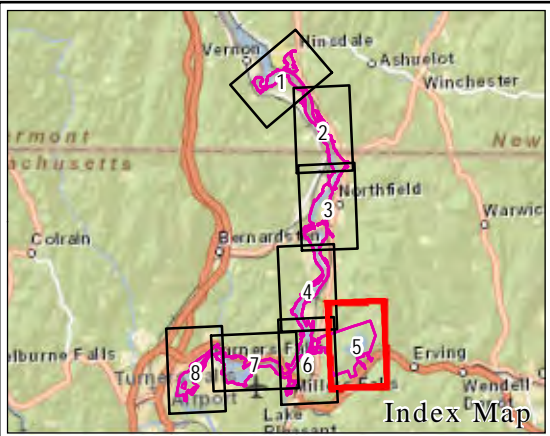


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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

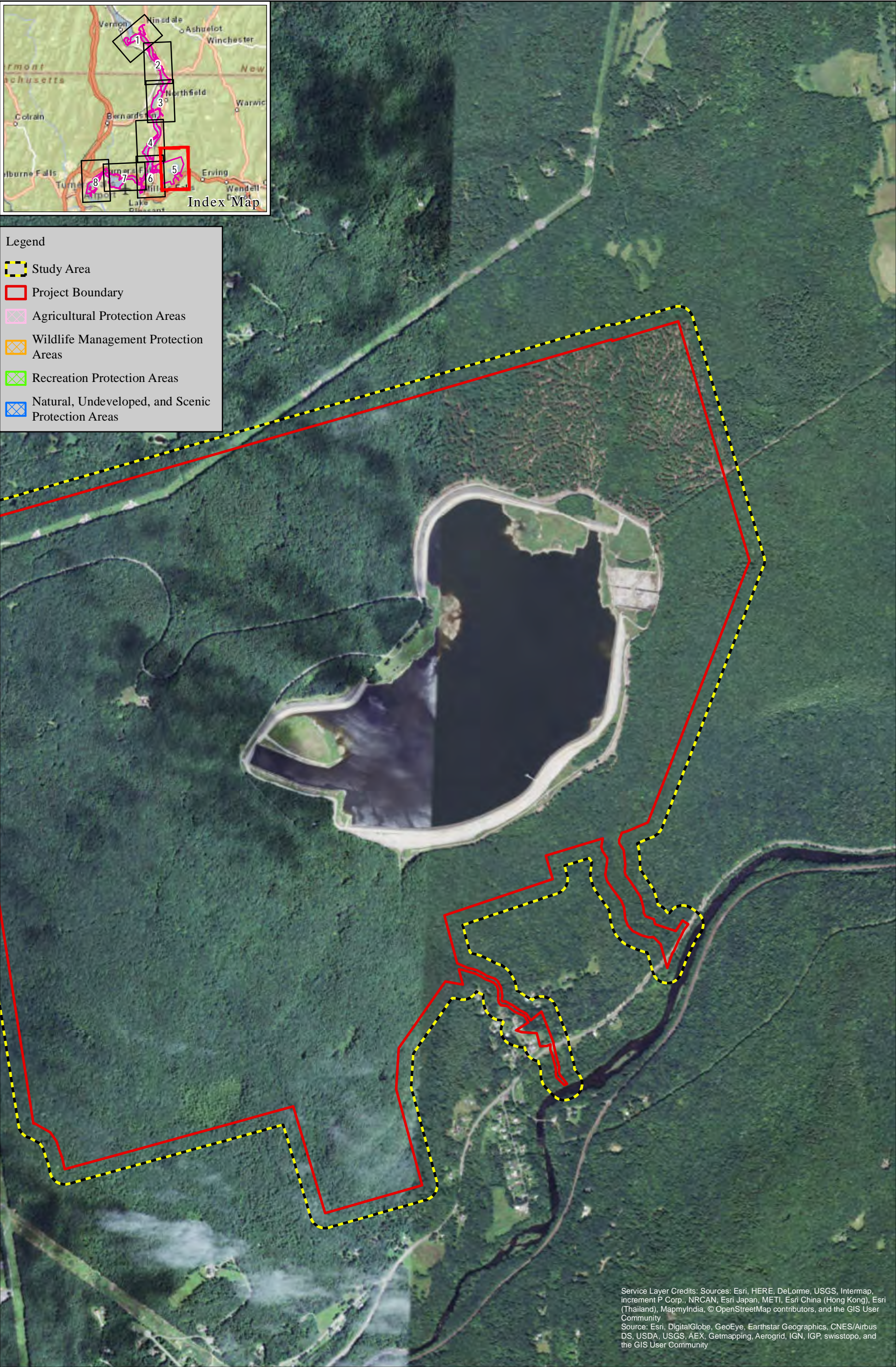
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Feet

Figure 4.2-1 Map 4 of 8
Conservation Protections within the Projects' Boundaries and within 200 Feet of the Projects' Boundaries



Legend

- Study Area
- Project Boundary
- Agricultural Protection Areas
- Wildlife Management Protection Areas
- Recreation Protection Areas
- Natural, Undeveloped, and Scenic Protection Areas



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Land Use Inventory

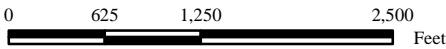
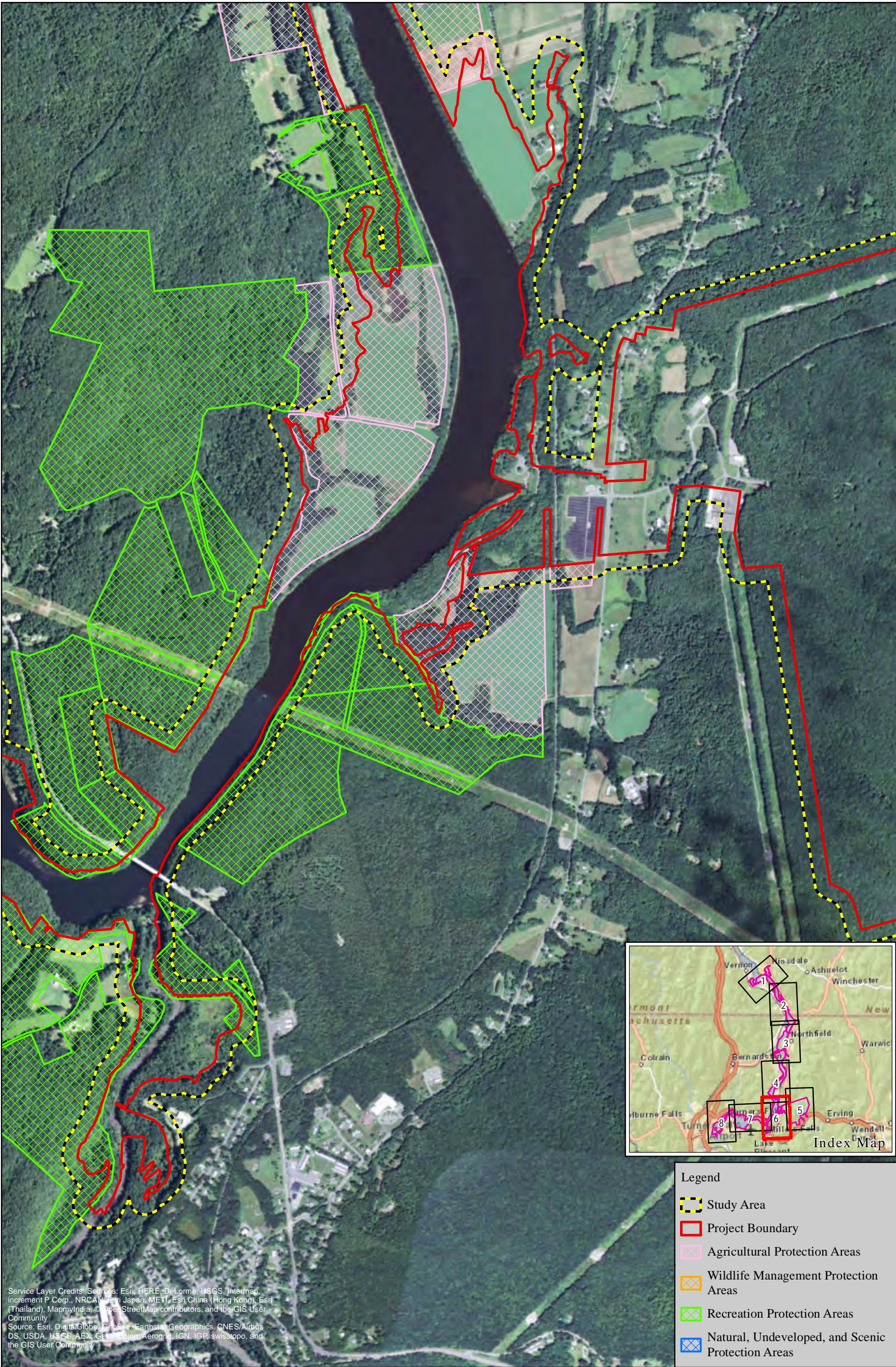


Figure 4.2-1 Map 5 of 8
Conservation Protections within the Projects' Boundaries and within 200 Feet of the Projects' Boundaries



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- Legend
- Study Area
 - Project Boundary
 - Agricultural Protection Areas
 - Wildlife Management Protection Areas
 - Recreation Protection Areas
 - Natural, Undeveloped, and Scenic Protection Areas



FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

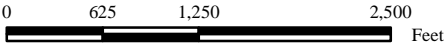
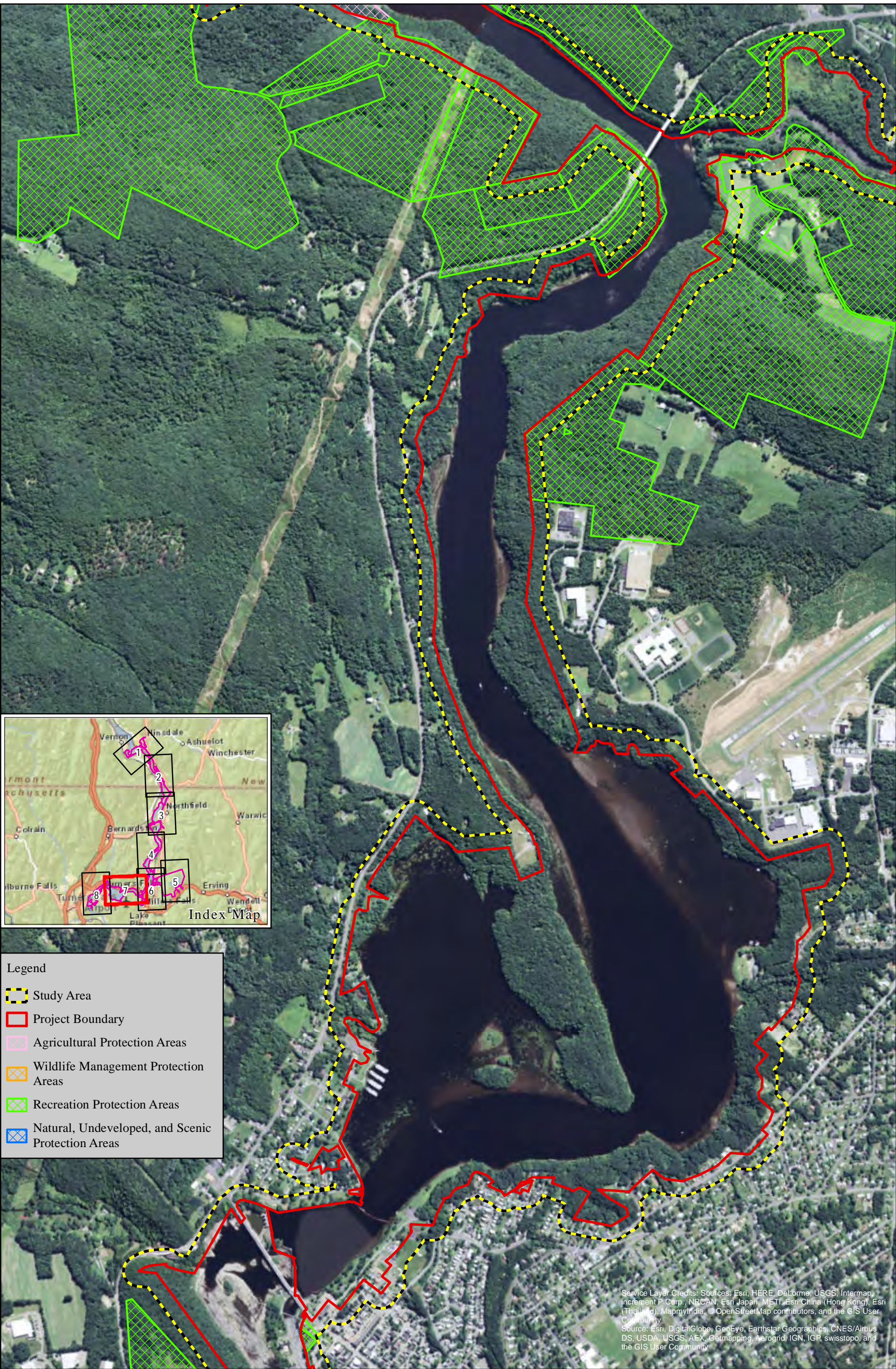


Figure 4.2-1 Map 6 of 8
Conservation Protections within the Projects' Boundaries and within 200 Feet of the Projects' Boundaries

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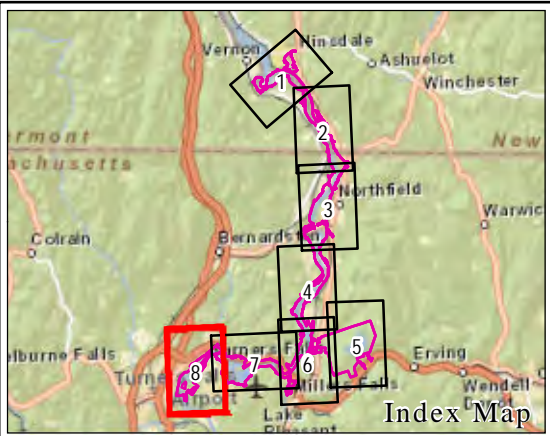
Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.2-1 Map 7 of 8
Conservation Protections within the Projects'
Boundaries and within 200 Feet of the
Projects' Boundaries

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Legend

- Study Area
- Project Boundary
- Agricultural Protection Areas
- Wildlife Management Protection Areas
- Recreation Protection Areas
- Natural, Undeveloped, and Scenic Protection Areas



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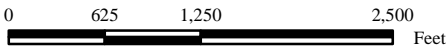


Figure 4.2-1 Map 8 of 8
Conservation Protections within the Projects' Boundaries and within 200 Feet of the Projects' Boundaries

4.3 Existing Land Use Controls

As described in [Section 3.1.3](#), the Licensee reviewed existing land use controls, including local plans, ordinances, statutes, policies, and guidelines that may affect the use of and/or management of lands inside the Projects' boundaries. The Licensee used this information in the development of the proposed land use designations to ensure that the proposed designations are consistent with the existing land use controls, existing local plans, and existing land uses.

Zoning around the Projects are generally zoned as Rural Residential, Residential-Agricultural, Agricultural Forestry.

Most of the land located in Erving adjacent to the Projects is zoned as Rural Residential. Rural Residential lands in the Town of Erving require a minimum of 2-acre for residential development ([Erving Open Space Planning Committee and the Franklin Regional Council of Governments Planning Department, 2010](#) and [Town of Erving, n.d](#)).

Most of the land located in Gill adjacent to the Projects is zoned as Residential-Agricultural. Residential-Agricultural lands require a minimum lot size of 2 acres. There is a small area adjacent to the Projects zoned as Village Residential, which requires a minimum lot size of 0.25 acres ([Gill Open Space and Recreation Committee and Franklin Regional Council of Governments Planning Department, 2011](#)).

In Greenfield, most of the land adjacent to the Turners Falls Project boundary is zoned as Rural Residential. The purposed of this district is to provide areas for low-density residential development and agricultural uses ([Town of Greenfield Open Space and Recreation Committee, 2012](#)).

Most of the land adjacent to the Projects in Montague is zoned as Agricultural-Forestry – 4. This district has a four-acre minimum lot size for single- and two-family homes. Inside the Village of Turners Falls, land adjacent to the Projects is generally zoned as Unrestricted, Industrial, Unrestricted, Residential, and Neighborhood Business ([Montague Open Space Planning Committee and Franklin Regional Council of Governments Planning Department, 2010](#)). The Neighborhood Business District is located in densely developed areas of Turners Falls and allows homes, with lot sizes from 10,000 square feet to 60,000 square feet. The Residential District has a 22,500 square foot minimum lot size for single-family homes.

According to the Downtown Turners Falls Livability Plan, the land adjacent to the Projects in downtown Turners Falls is primarily zoned as Neighborhood Business and Historic Industrial (mainly the power canal island). Business and light industrial activity are allowed in the Historic Industrial District ([Dodson & Finker, Landscape Architects and Planners, and Howard/Stein-Hudson Associates, 2013](#)).

Almost all of the land in Northfield adjacent to the Projects is zoned as Residential-Agricultural. This district runs north south along the Connecticut River and allows the following uses by right: single-family dwellings, two-family dwellings, day care facilities for six or less children or adults, agriculture, forestry, religious uses, education uses, and home businesses with no more than one full-time employee ([Northfield Open Space Committee, 2013](#)).

Generally, the local plans recommend the protection of natural resources, farmland, open space, and promoted additional recreation opportunities along the Connecticut River. Several plans discuss lands owned by the Licensee as described below.

The Open Space and Recreation Plan for Erving ([Erving Open Space Planning Committee and the Franklin Regional Council of Governments Planning Department, 2010](#)) states that although lands owned by the Licensee are not permanently protected from development, they provide public benefits including access to recreational activities and open spaces and the maintenance of vast scenic areas. This plan notes that the Licensee land surrounding the pumped storage facility will remain in recreational and forestry uses.

LAND USE INVENTORY

The Open Space and Recreation Plan for Gill ([Gill Open Space and Recreation Committee and Franklin Regional Council of Governments Planning Department, 2011](#)) also states that Licensee owned lands are considered temporarily protected as open space for the duration of the FERC Project license.

The Sustainable Franklin County Plan ([Franklin Regional Council of Governments, No Date](#)) generally recommends greater access to the Connecticut River for outdoor recreation purposes.

The Open Space and Recreation Plan for Montague ([Montague Open Space Planning Committee and Franklin Regional Council of Governments Planning Department, 2010](#)) promotes ongoing maintenance and expansion of recreational areas and programs provided by the Licensee under its FERC license, including but not limited to parks, the Canalside Rail Trail, and boat access to the Connecticut River. The Montague plan recommends that the Town work with the Licensee to improve access to the Connecticut River, including an access point to the river close to downtown Turners Falls. The Montague plan also acknowledges that all Licensee-owned land subject to the FERC license is considered to have limited protection from development and that ownership and use of land by the Licensee has important implications for open space, natural resources, and recreation in the Town of Montague.

The Turners Falls Livability Plan ([Dodson & Finker, Landscape Architects and Planners, and Howard/Stein-Hudson Associates, 2013](#)) recommends further collaboration with the Licensee to create a boat launch on the Turners Falls side of the river. The plan also recommends strengthening the connection between the Discovery Center Park and the power island by creating a new Power Island Park at the tip of the island facing the falls.

4.4 Licensee Management of Non-Project Uses of Project Lands

FirstLight has an established FERC-approved Permit Program through which it administers non-project uses of Project lands including lands it owns in fee, or in which it has an interest ([Howard, 2008](#)). Under its Permit Program it is FirstLight's policy to "protect the scenic, recreational, and other environmental values of the Project, consistent with safe, efficient operation", and consistent with the standard Land Use Articles in the current licenses for the Turners Falls and Northfield Mountain project licenses.

Consistent with the Standard Land Use articles, FirstLight's Permit Program recognizes four categories of proposed uses of Project lands that require varying levels of FERC notification and control requirements:

- Category A: Miscellaneous uses and/or conveyances of interests not addressed in subsequent categories which may require FERC approval. For Category A uses, FirstLight assesses the proposed use and determines, on a case by case basis, the best method of processing the proposed use/conveyance request such as processing the proposed use under Category B, C, or D, or obtaining prior FERC approval prior to granting permission. Category A uses are typically temporary use of non-project lands for one-time events, such as running races, state cross-country meets, horseback riding, and triathlons.
- Category B: Uses associated with single-family residential dwellings abutting the Project boundary such as (1) landscape planting; (2) non-commercial piers, landings, boat docks or similar facilities; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. For Category B uses, FirstLight has an established program for issuing permits without prior FERC approval or notification for the specified types of use and occupancy of Project lands and waters, which may be subject to the payment of a reasonable fee to cover the costs of administering the permit program. For proposed uses in this category, FirstLight places an emphasis on multiple use and occupancy of facilities for access to Project lands or waters. FirstLight also ensures, to the extent practical, that the uses and occupancies for which it grants permission are maintained in good repair and comply with applicable State and local environmental, health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, FirstLight inspects the site to consider whether planting vegetation, grading or the

LAND USE INVENTORY

use of riprap would be adequate to control erosion at the sites, and to determine that the proposed construction is needed and would not change the basic contour of the reservoir.

- Category C: Municipal and utility uses such as (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary State and Federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas and electric distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. For Category C uses, consistent with the Standard Land Use articles, no later than January 15 of each year, FirstLight prepares a report for the Project, which is filed with FERC, that briefly describes each conveyance made during the calendar year.
- Category D: Uses such as (1) construction of new bridges or roads for which all necessary State and Federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary Federal and State water quality certificates or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection or support structures within the project boundary, for which all necessary Federal and State approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed or a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development acres conveyed under this category in any calendar year. For Category D uses, prior to conveying any interest in Project lands or waters, FirstLight conducts an internal review of the proposed use, and prepares information about the proposed use, including the location of the lands to be conveyed, the nature of the proposed use, and the identity of any Federal or State agencies consulted or approvals needed. At least 45 days prior to conveyance, FirstLight files the information on the proposed use and conveyance with FERC. Unless FERC, within 45 days from the filing date, requires FirstLight to file an application for prior approval, FirstLight may convey the intended interest at the end of that period.

For both Category C and D uses, before notifying FERC, FirstLight consults with Federal and State fish and wildlife agencies, as appropriate, and the State Historic Preservation Officer. For all categories of uses, FirstLight also reviews the proposed use/conveyance to ensure that it is not inconsistent with any FERC approved recreational resources.

Permits granted by FirstLight under its Permit Program for non-project use of Project lands are generally in the form of a 5-year revocable license agreement. The license agreements regulate such use and occupancy through numerous provisions protecting Project and natural resources and thus are consistent with the “protection and enhancement of the project’s scenic, recreation, or other environmental values...”⁴ License terms can vary and all can be terminated upon 6 months’ notice by either party. The licenses also expressly state that they are “subject to the terms and conditions as imposed by the FERC Project Licenses or to be imposed by FERC in connection with any order relative to the Projects.” As a result of this provision, the ability of the Commission to further condition or even prohibit such authorized use and occupancy in

⁴ Article 52(a) of the Northfield License and Article 43(a) of the Turners Falls License.

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order to meet the public interest standard of Section 10(a) of the Federal Power Act is fully preserved by the Licensee. All license agreements have in common the provisions below:

- The license holder must allow unobstructed use of the property by the public without regard to race, color, religious creed or national origin.
- The license is not transferable.
- The license holder must obtain all necessary federal, state, and local permits.
- Excavation, clearing, grading or filling of property is prohibited.
- Docks, piers, walls or other waterway improvements are prohibited unless all state and federal approvals have been obtained.
- Construction of any structures, fixtures or improvements on the property is prohibited without prior approval by FirstLight.
- Parking or storage of vehicles or equipment on Project Property is prohibited, unless expressly authorized by conditions of the license.
- Hazardous materials may not be used or stored on the property unless otherwise authorized by the conditions of the license.
- Removal of timber, vegetation or plantings is prohibited without written permission from FirstLight.
- FirstLight reserves its right to flood and flow water on the property.
- The application of any fertilizer, pesticides and herbicides is prohibited (applicable to vegetated shoreline sites).
- FirstLight may require the license holder to plant and maintain native vegetation to reduce or prevent erosion and run-off into the Connecticut River (applicable to vegetated shoreline sites).

These requirements provide a comprehensive regulatory structure that assures that the granting of permission for non-project uses does not adversely affect the Projects' scenic, recreational and environmental values.

Non-project uses generally include camps within the Project boundaries, docks and landscape uses for abutters, and water withdrawals for agricultural purposes ([Table 4.4-1](#)). [Figure 4.4-1](#) identifies the Licensee's ownership within 200 feet of the Projects' boundaries. [Figure 4.4-2](#) shows existing docks (46)⁵ and water withdrawals (8). Thirty-three of the 46 docks are located either in Barton Cove or just upstream of Barton Cove.

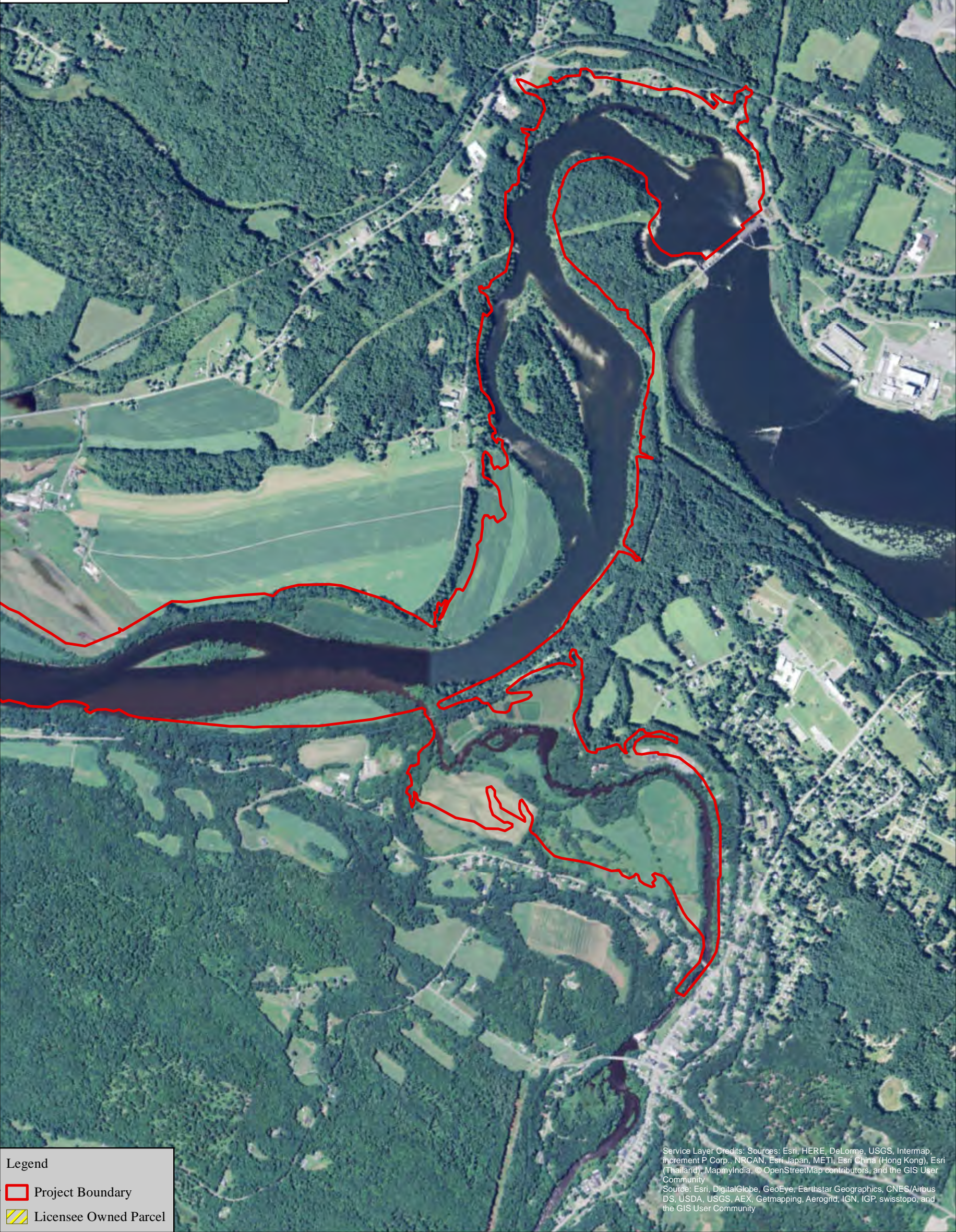
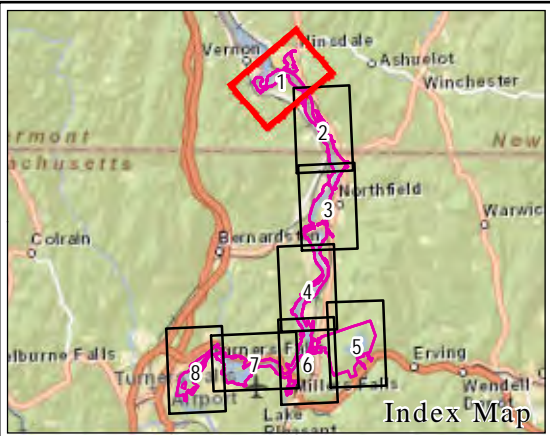
In addition, the Licensee annually grants a number of permissions for temporary use of non-project lands for one-time events. These temporary uses include permissions for running races, state cross-country meets, horseback riding, and triathlons.

⁵ Of these 46 docks, four are associated with Project recreation sites that are available for public use. These include the docks at the State Boat Launch, Barton Cove Nature Area, Boat Tour and Riverview Picnic Area and Munn's Ferry Boat and Camping Recreation Area.

LAND USE INVENTORY

Table 4.4-1 Non-Project Uses of Project Lands

Licensed Use	Licensee	Town
Miscellaneous Use (Fire Pond)	Town of Erving	Erving
Utility Use (Communications Equipment)	Verizon Wireless	Erving
Public Marina (Boat Club with 4 boat docks)	Franklin County Boat Club, Inc.	Gill
3 Non-commercial Dock & Landscape	2 Individuals, 1 Trust	Gill
3 Landscape	2 Individuals, 1 Sportsmans Club	Gill
10 Non-commercial Docks	Licensed to separate individuals	Gill
6 Camps with Non-commercial Docks	Licensed to separate individuals	Gill
4 Camps without Docks	Licensed to separate individuals	Gill
Water Withdrawal	Split River Farm	Gill
Water Withdrawal with Dock	Northfield Mount Hermon School	Gill
11 Camps with Non-commercial Docks	Licensed to separate individuals	Montague
2 Camps without Docks	Licensed to separate individuals	Montague
1 Camp (sporting club with 2 docks)	Turners Falls Rod & Gun Club	Montague
2 Landscape	2 Individuals	Montague
4 Non-commercial Dock	4 Individuals	Northfield
Agricultural (crops)	Vern-Mont Farm	Northfield
Residential	Fuller Farm Property (historical home)	Northfield
Water Withdrawal	Smiarowski Brothers, LLC	Northfield
2 Water Withdrawals	Nourse Farms, Inc.	Northfield
Water Withdrawal	Four Star Farm	Northfield
Water Withdrawal and non-commercial dock	Sudbury Nurseries West	Northfield
Truck turn-around	paperlogic™	Turners Falls
Parking area	Franklin County Regional Housing and Redevelopment Authority	Turners Falls
Effluent Line	Australis Aquaculture LLC	Turners Falls
Water Withdrawal	Silvio O. Conte Anadromous Fish Research Laboratory	Turners Falls



Legend

- Project Boundary
- Licensee Owned Parcel

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FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

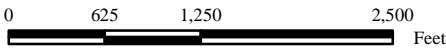
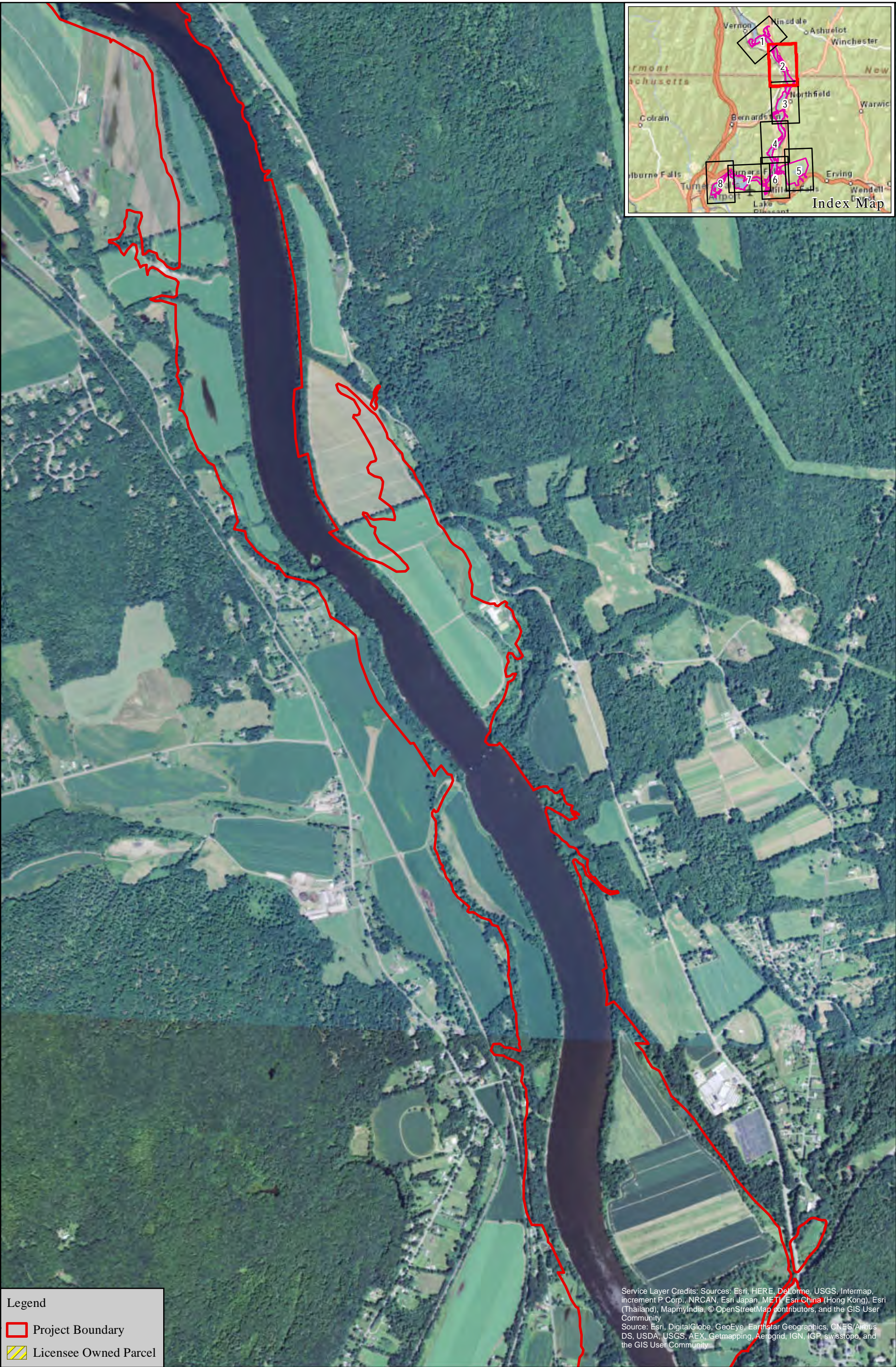


Figure 4.4-1 Map 1 of 8
Licensee Ownership within 200 feet of the
Projects' Boundaries



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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

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Land Use Inventory

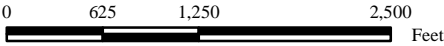
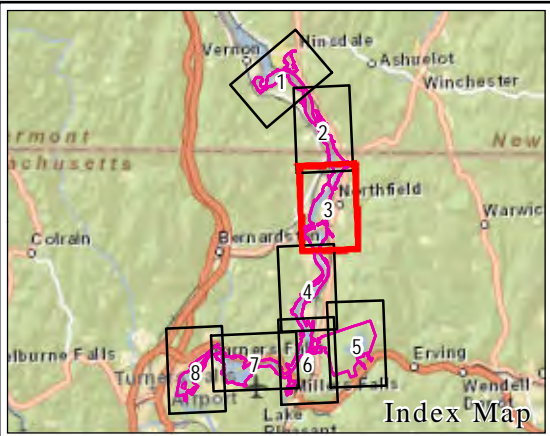




Figure 4.4-1 Map 2 of 8
Licensee Ownership within 200 feet of the
Projects' Boundaries

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Legend

 Project Boundary

 Licensee Owned Parcel

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Northfield Mountain Pumped Storage Project No. 2485
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Study 3.6.5
Land Use Inventory

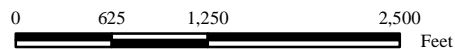
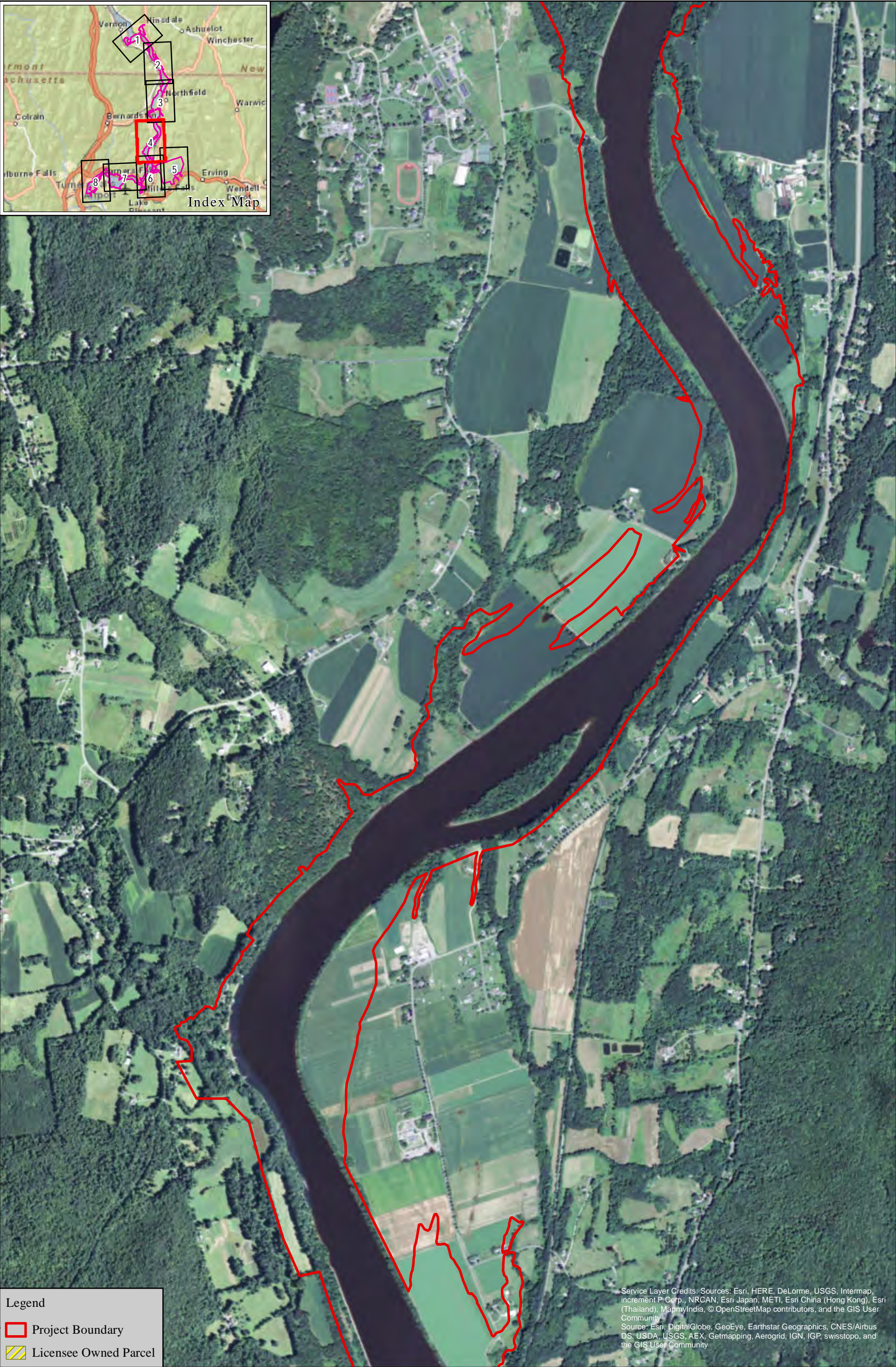
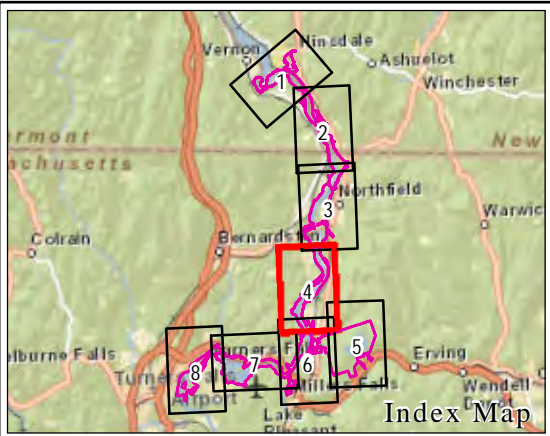


Figure 4.4-1 Map 3 of 8
Licensee Ownership within 200 feet of the
Projects' Boundaries



Legend

Project Boundary

Licensee Owned Parcel

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Northfield Mountain Pumped Storage Project No. 2485

Turners Falls Hydroelectric Project No. 1889

Study 3.6.5

Land Use Inventory

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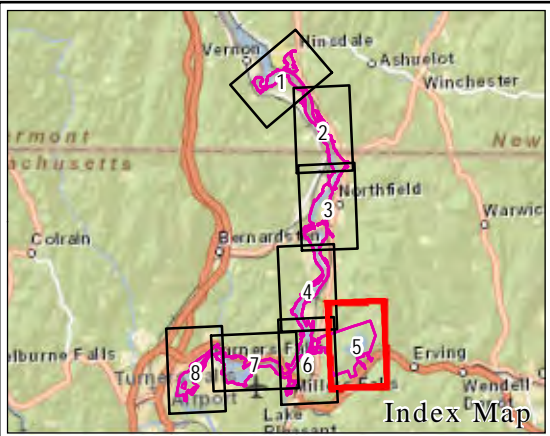
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Figure 4.4-1 Map 4 of 8

Licensee Ownership within 200 feet of the

Projects' Boundaries

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Legend

- Project Boundary
- Licensee Owned Parcel

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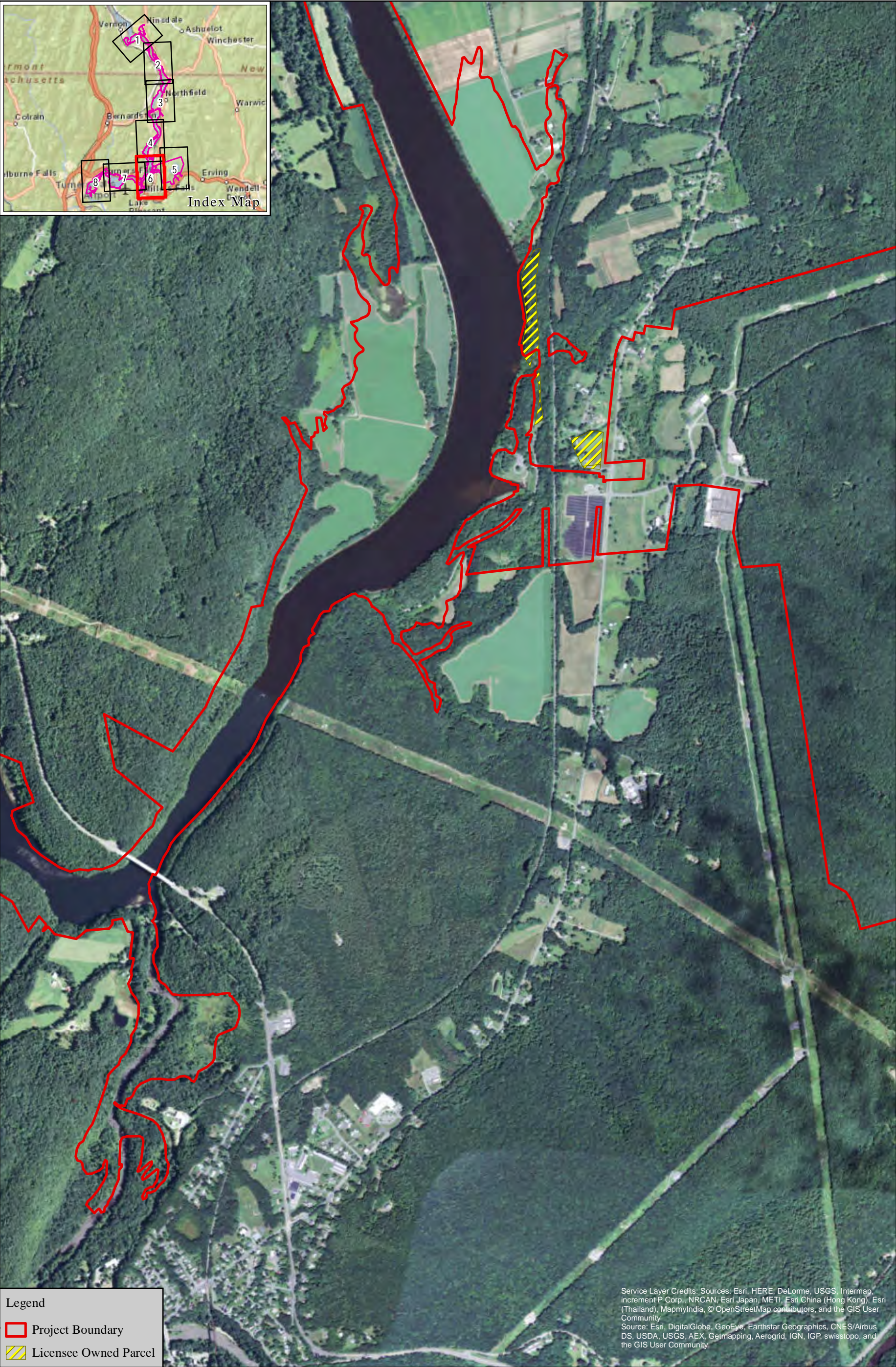
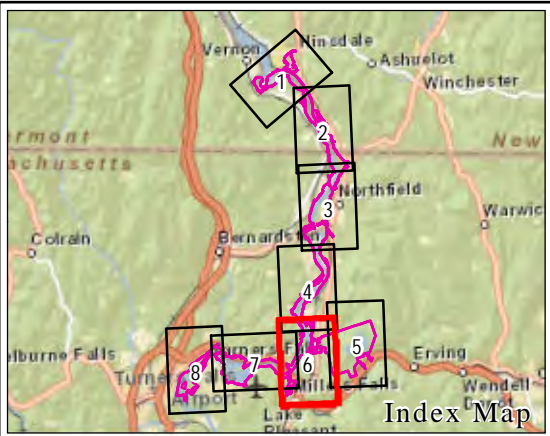


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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.4-1 Map 5 of 8
Licensee Ownership within 200 feet of the
Projects' Boundaries



Legend

- Project Boundary
- Licensee Owned Parcel

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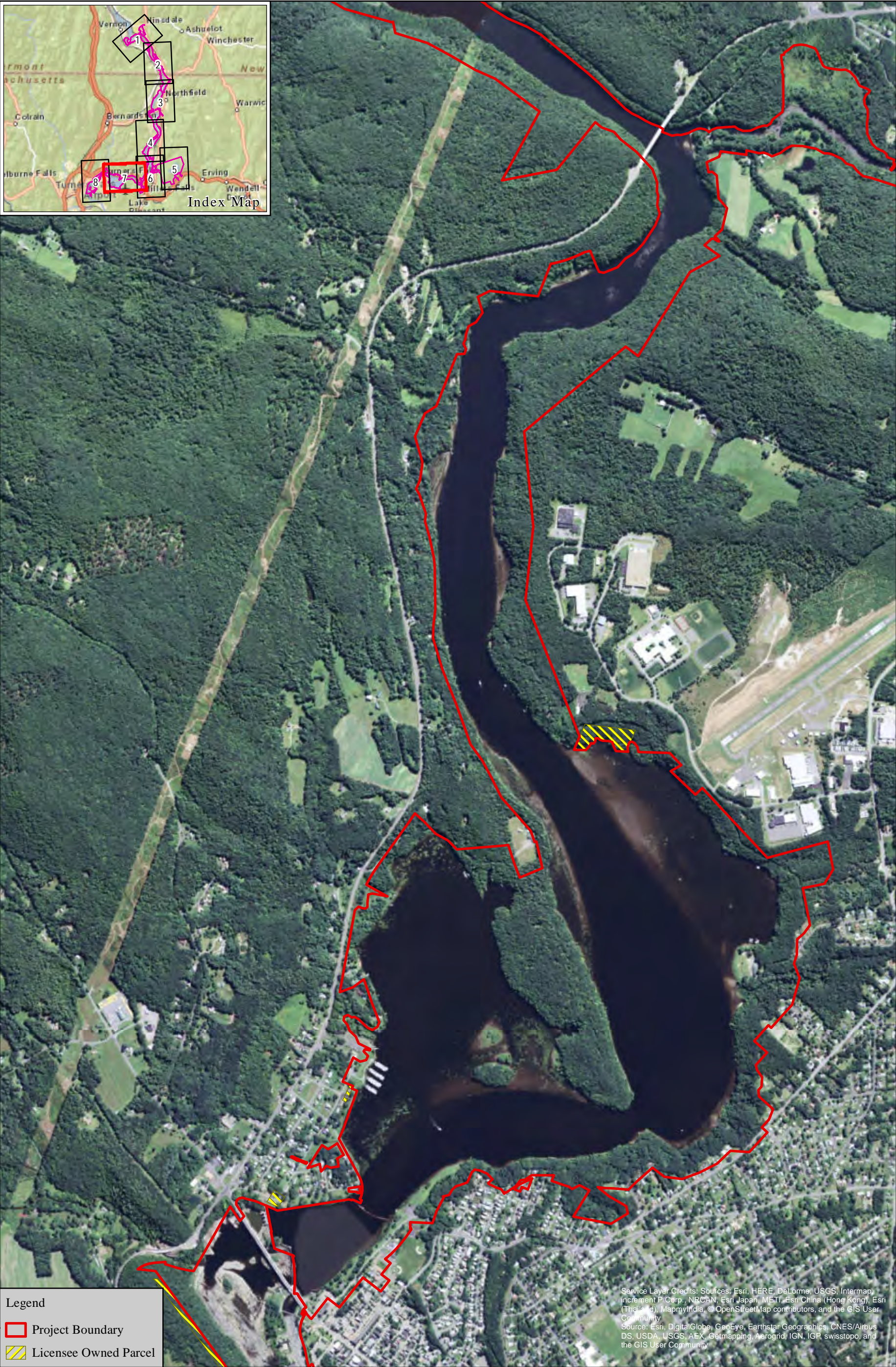
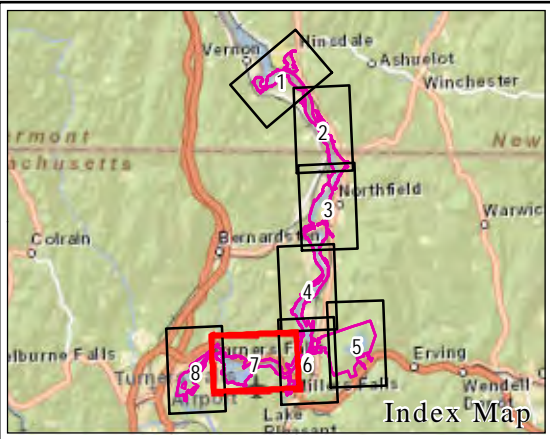


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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.4-1 Map 6 of 8
Licensee Ownership within 200 feet of the
Projects' Boundaries



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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

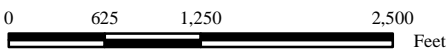
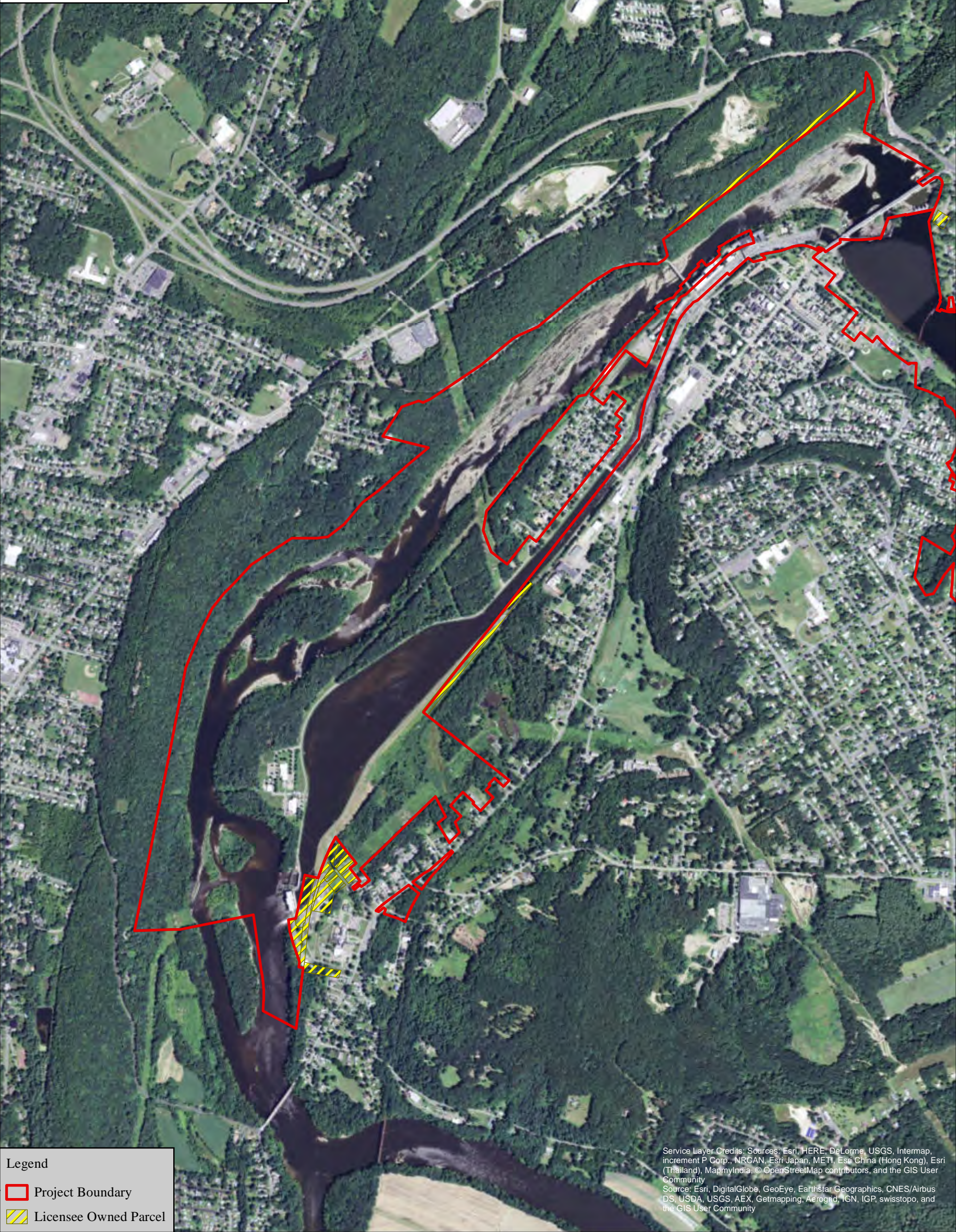
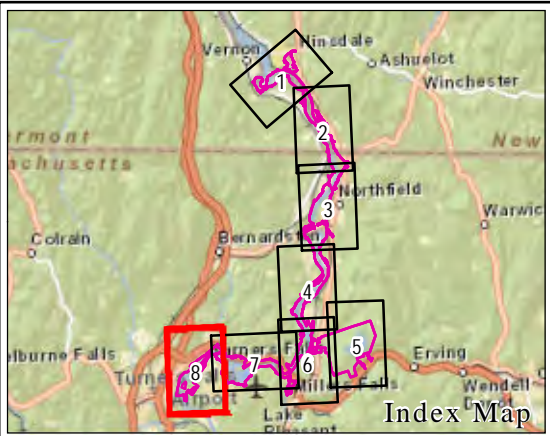


Figure 4.4-1 Map 7 of 8
Licensee Ownership within 200 feet of the
Projects' Boundaries



Legend

- Project Boundary
- Licensee Owned Parcel

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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

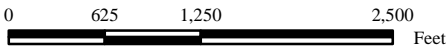
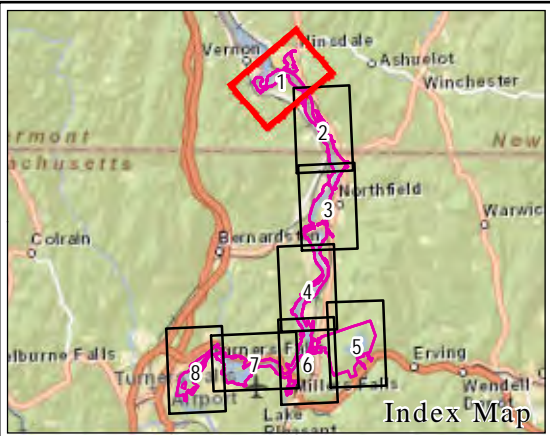
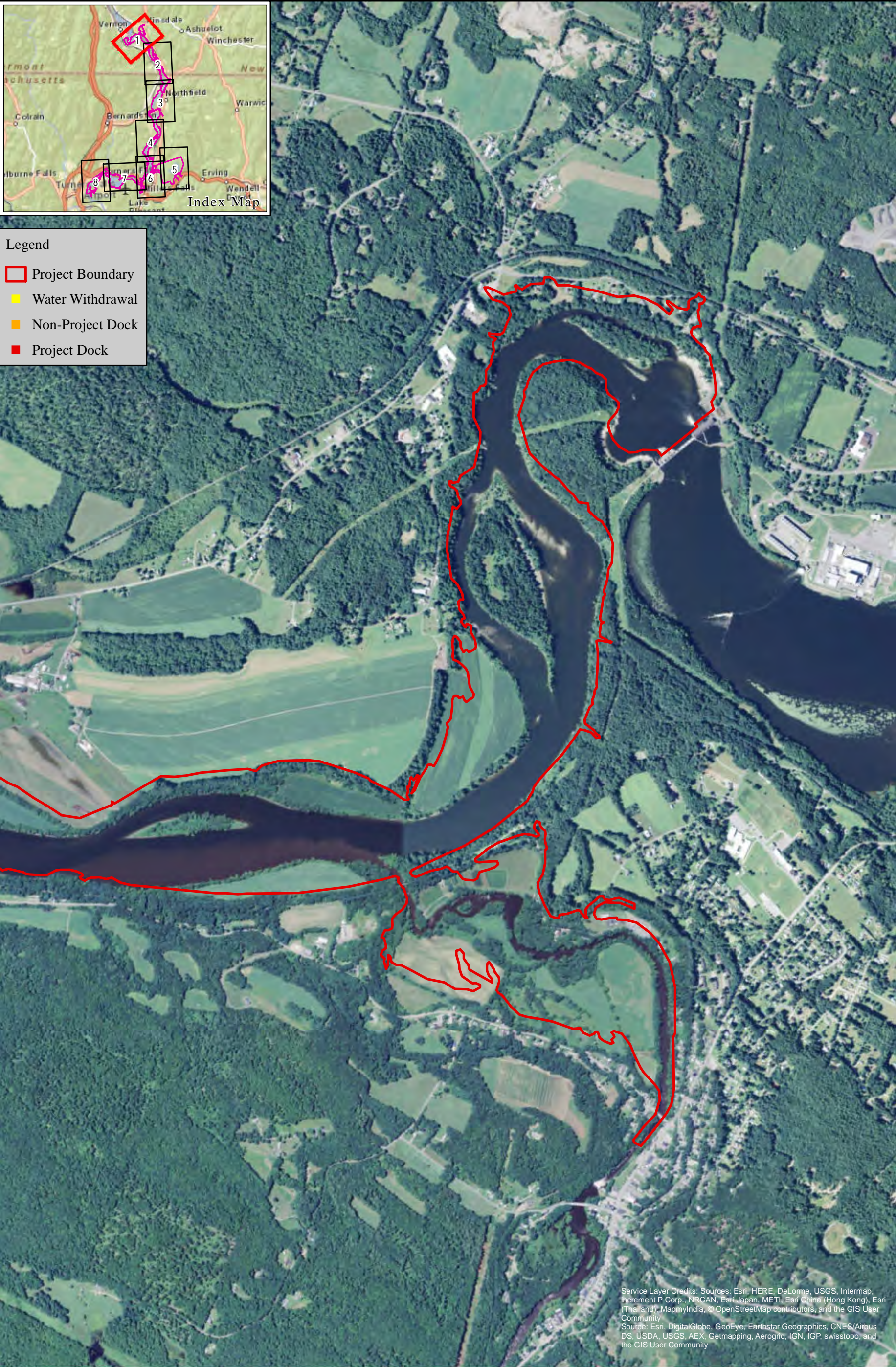


Figure 4.4-1 Map 8 of 8
Licensee Ownership within 200 feet of the
Projects' Boundaries



Legend

- Project Boundary
- Water Withdrawal
- Non-Project Dock
- Project Dock

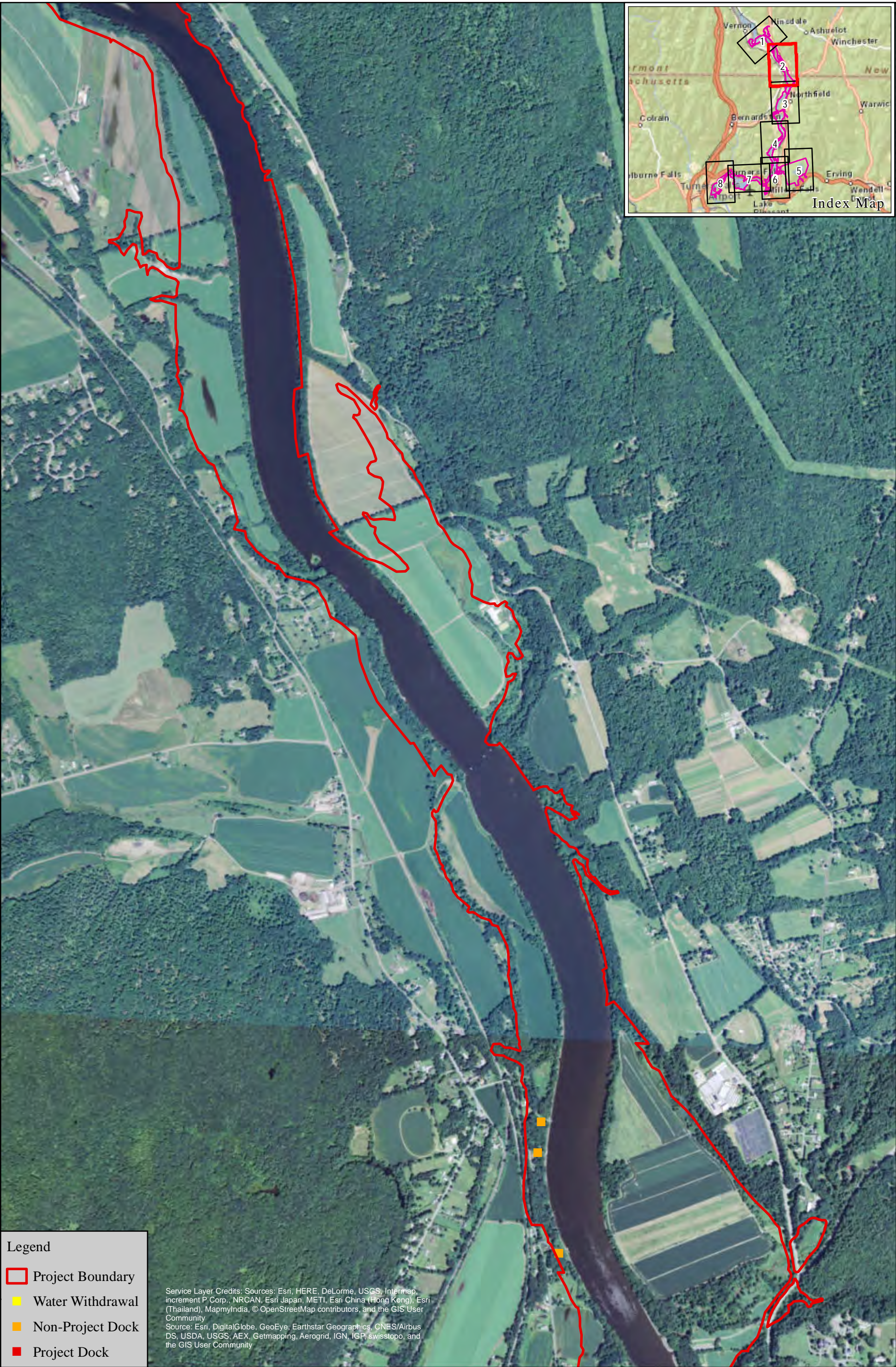


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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889
Study 3.6.5
Land Use Inventory
0 625 1,250 2,500
Feet

Figure 4.4-2 Map 1 of 8
Existing Docks and Water Withdrawals
on Project Lands



FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

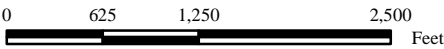
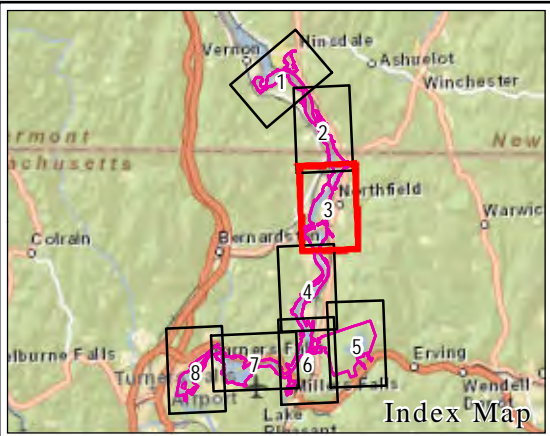
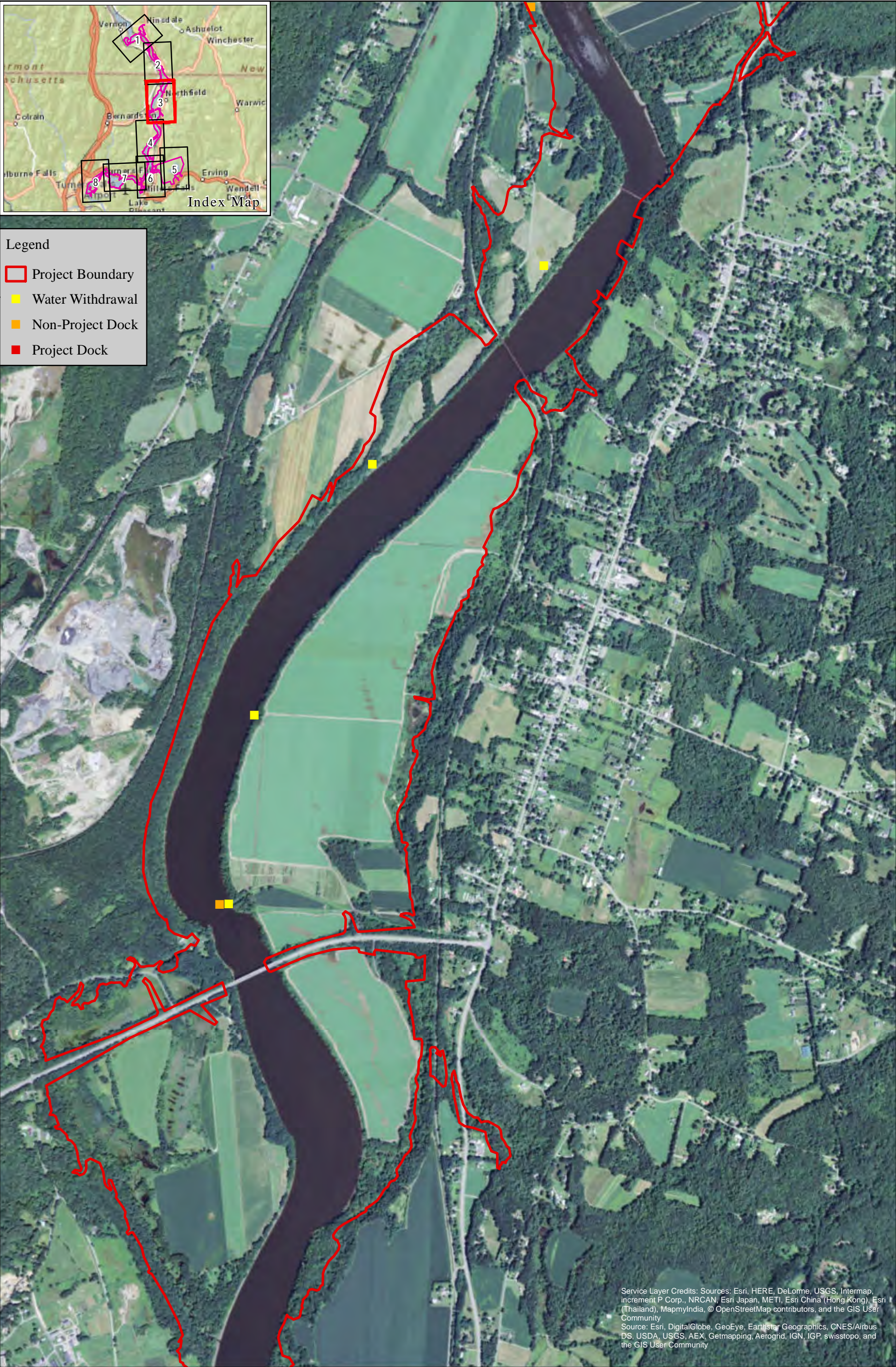


Figure 4.4-2 Map 2 of 8
Existing Docks and Water Withdrawals
on Project Lands



Legend

- Project Boundary
- Water Withdrawal
- Non-Project Dock
- Project Dock



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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

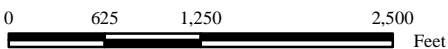
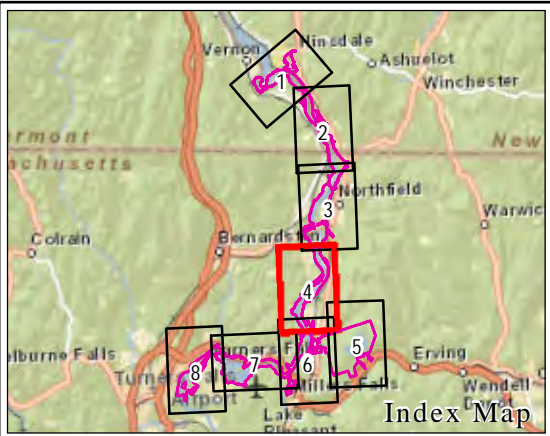
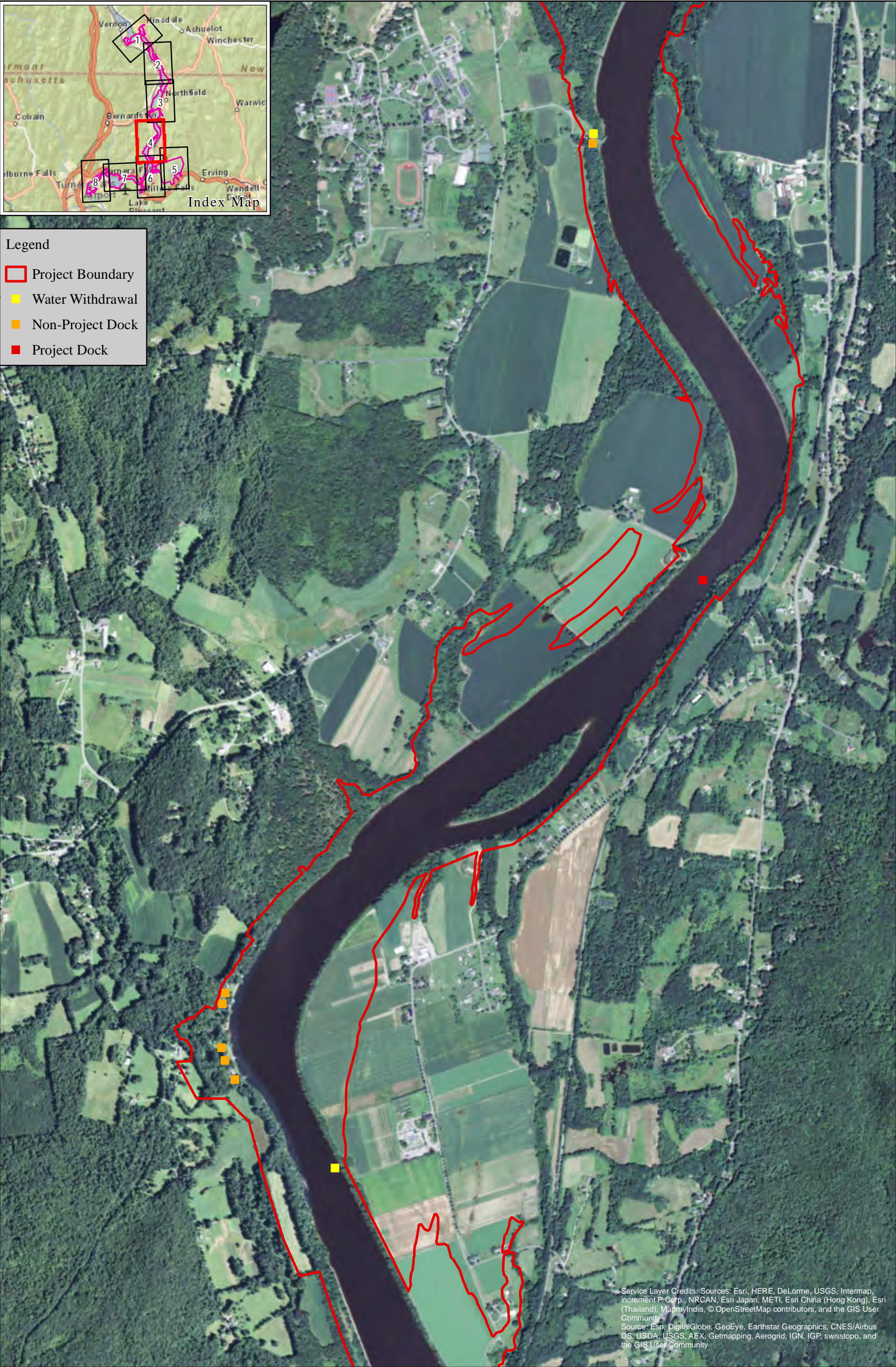


Figure 4.4-2 Map 3 of 8
Existing Docks and Water Withdrawals
on Project Lands



Legend

- Project Boundary
- Water Withdrawal
- Non-Project Dock
- Project Dock



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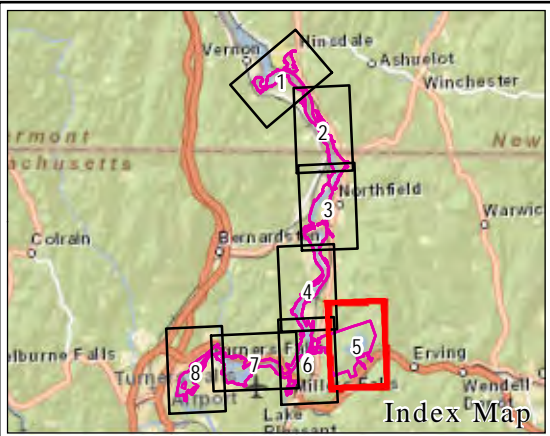


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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.4-2 Map 4 of 8
Existing Docks and Water Withdrawals
on Project Lands



Legend

- Project Boundary
- Water Withdrawal
- Non-Project Dock
- Project Dock



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Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

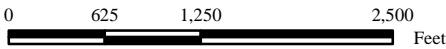
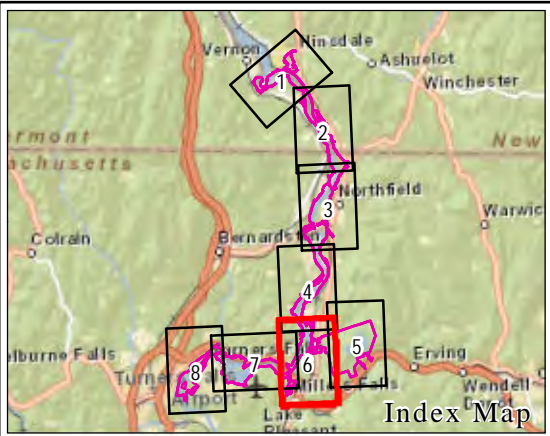
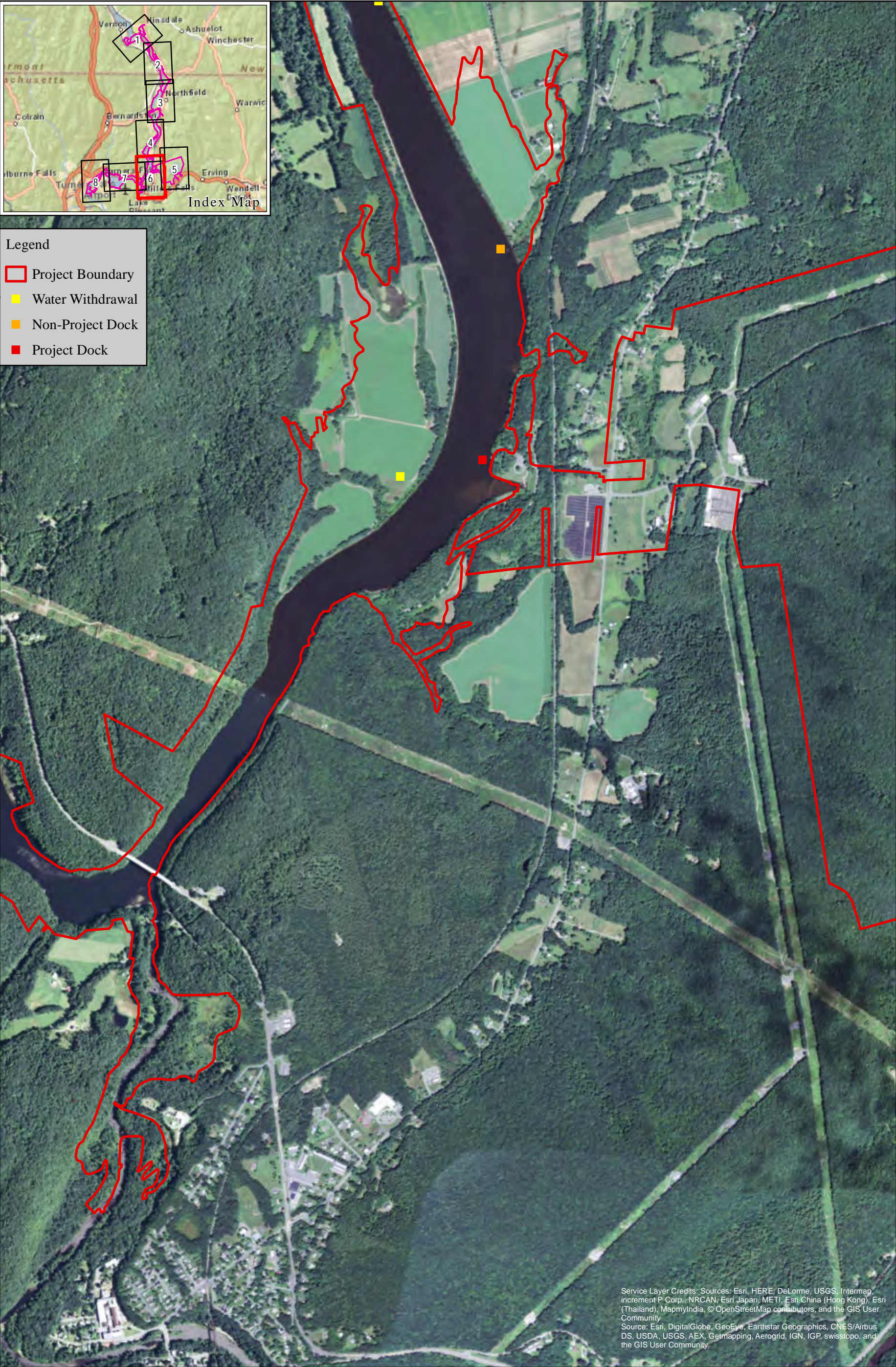


Figure 4.4-2 Map 5 of 8
Existing Docks and Water Withdrawals
on Project Lands



Legend

- Project Boundary
- Water Withdrawal
- Non-Project Dock
- Project Dock



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Study 3.6.5
Land Use Inventory

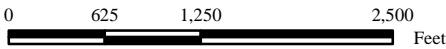
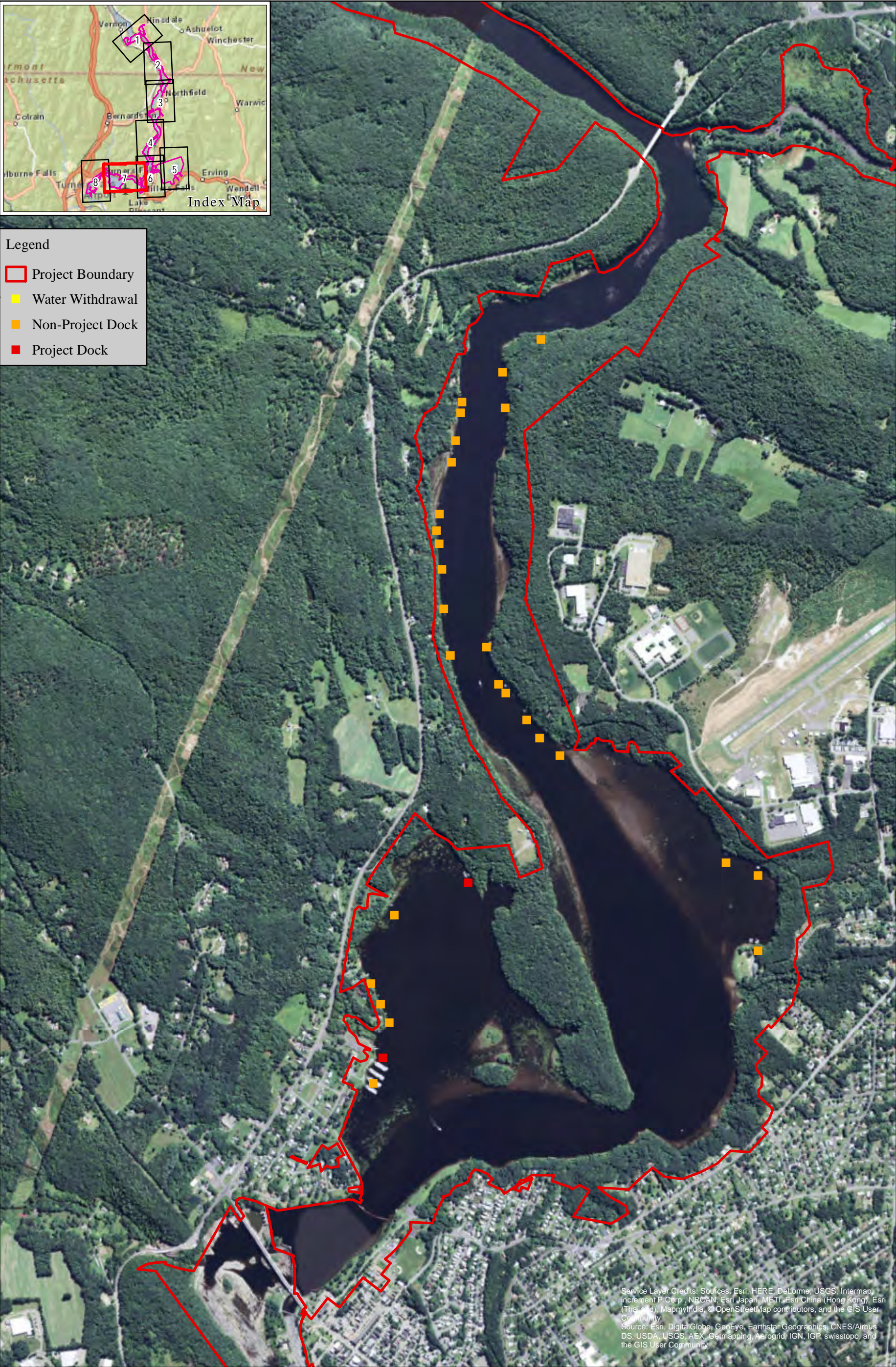
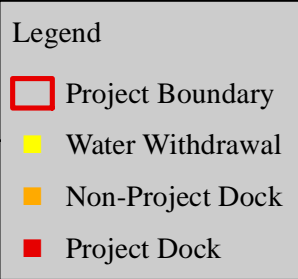
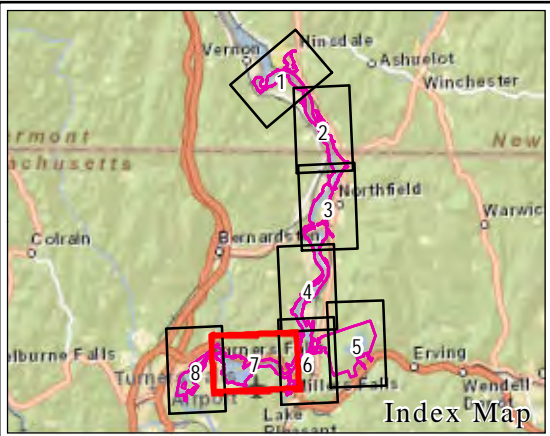


Figure 4.4-2 Map 6 of 8
Existing Docks and Water Withdrawals
on Project Lands



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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

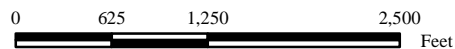
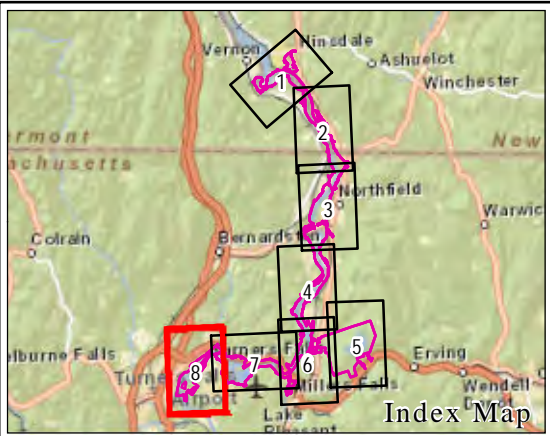
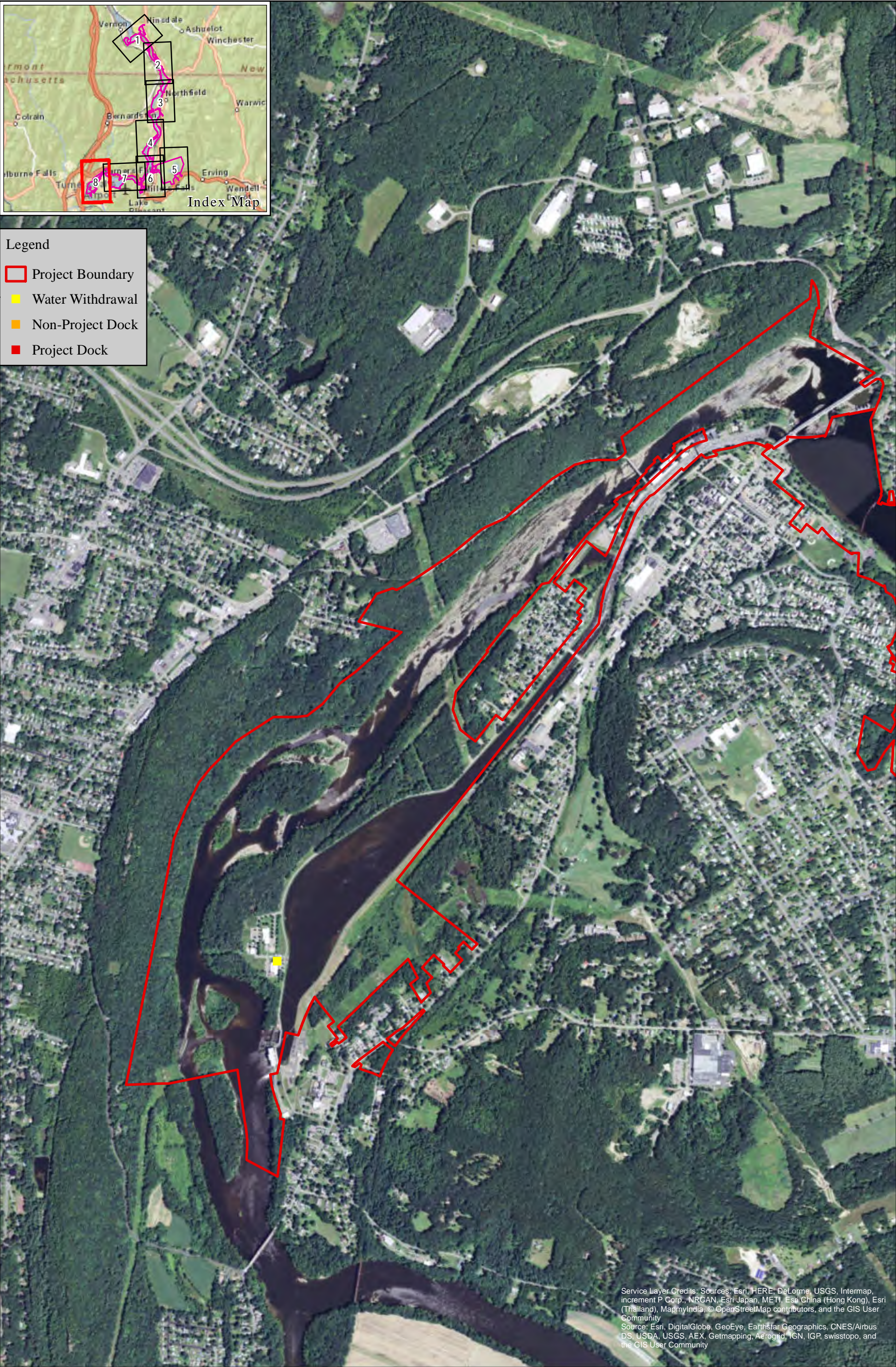


Figure 4.4-2 Map 7 of 8
Existing Docks and Water Withdrawals
on Project Lands



Legend

- Project Boundary
- Water Withdrawal
- Non-Project Dock
- Project Dock



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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.4-2 Map 8 of 8
Existing Docks and Water Withdrawals
on Project Lands

4.5 Relicensing Study Results

As discussed in [Section 3.1.5](#), the Licensee reviewed the results from other relicensing resource studies as appropriate. This information was used to refine the existing land use categories and to inform the development of the proposed land use designations.

For Study No. 3.4.1 *Baseline Study Of Terrestrial Wildlife And Botanical Resources* ([Kleinschmidt & GSE, 2015a](#)) and Study No. 3.5.1 *Baseline Inventory Of Wetland, Riparian And Littoral Habitat In The Turners Falls Impoundment, And Assessment Of Operational Impacts On Special-Status Species* ([Kleinschmidt & GSE, 2015c](#)), NWI mapped wetland types were field verified. The wetland types were then mapped and described in Study No. 3.5.1. These mapped wetlands were used to refine the existing wetland land use category shown in [Figure 4.1-1](#) within the Projects' boundaries. More specifically, areas of mapped wetlands that were not shown as wetland in the land use database layer from MassGIS are shown as wetland in [Figure 4.1-1](#). For Study No. 3.4.1 and Study No. 3.5.1, the locations of RTE species sightings and observations were also documented through the use of GPS and photographs. RTE wildlife species habitat and plants mapped in Study No. 3.5.1, will be incorporated into the overlay map of sensitive resources that will be used by the Licensee in conjunction with the proposed land use designations maps.

For Study No. 3.7.1 *Phase IA (Reconnaissance) Archaeological Survey* ([Sara, et al., 2014a and 2014b](#)) areas within the Project boundary that are considered sensitive for the presence of potentially eligible archaeological resources were identified. For Study No. 3.7.2 *Historic Architectural Resources Survey & National Register Evaluation (MA, NH, VT)* ([GSE & TRC, 2014](#)) and Study No. 3.7.2 *Historic Architectural Resources Survey & National Register Evaluation Addendum* ([GSE & TRC, 2015d](#)), historic structures considered eligible for listing on the NRHP were identified. These will be incorporated into an overlay map of sensitive resources that will be used by the Licensee in conjunction with the proposed land use designations.

Study No. 3.1.1 *2013 Full River Reconnaissance* ([S&A et al., 2014a](#)) examined the correlation between erosion and riverbank features, characteristics, and adjacent land use and found that various types and degrees of erosion in the Turners Falls Impoundment can be observed at locations with a wide variety of adjacent land uses. Two of the most severe areas of erosion that were identified in Study No. 3.1.1 are located immediately downstream of Vernon Dam and just upstream of the Route 10 Bridge. Study No. 3.1.1 also reported that erosion has also been observed in areas where houses and other associated development are located in close proximity to the river, and, in several instances riparian vegetation has also been cleared where houses have been built close to the river. Study No. 3.1.1 also identified erosion in agricultural areas, where agriculture along the river typically is located on relatively flat floodplain terraces with only a narrow or virtually non-existent zone of riparian vegetation. Frequently the riverbanks in these areas are steep to overhanging and consist of silty/sandy soils that are easily erodible unless sufficient vegetation is present. Study No. 3.1.2 *Northfield Mountain/Turners Falls Operations Impact on Existing Erosion and Potential Bank Instability* ([S&A et al., 2014b](#)) conducted further analysis and evaluation of correlations between various land uses and erosion processes. The Licensee will take into account identified areas of erosion when permitting non-project uses of Project lands.

Study No. 3.4.2 *Effects of Northfield Mountain Pumped Storage Development-Related Land Management Practices and Recreational Use on Terrestrial Habitats* ([Kleinschmidt & GSE, 2015b](#)) concluded that the Northfield Mountain Project has very little, if any, effect on botanical and wildlife resources within the study area, which includes approximately 2,011 acres of forested land around the Northfield Mountain Project's facilities within the FERC Project boundary and bordering lands. Study No. 3.4.2 found that the occurrence and distribution of wildlife and botanical resources in the study area is generally unrelated to Project-related activities and that there is no evidence of any on-going adverse effects to the described resources. Study No. 3.4.2 concluded that recreational activities at Northfield Mountain do not cause extensive harm or have a negative impact on the environment because recreational facilities are maintained

in a naturalized state, and usage for recreational activities is not currently disrupting and dispersing wildlife or indirectly contributing to the introduction of invasive species.

4.6 Proposed Land Use Designations

The Licensee proposes land use designations (see [Figure 4.6-1](#) and [Table 4.6-1](#)) within the Projects' boundaries that are generally the same as the existing land use categories. The only exception is that the Licensee is proposing to include the existing shrub/scrub land use category in the proposed natural/undeveloped land use designation because land inside the Projects' boundaries categorized as shrub/scrub are considered as natural/undeveloped land. No other changes from existing land use categories were determined to be necessary based on a review of existing land use controls and literature, the location of conservation easements within 200 feet of the Projects' boundaries, and the results of relevant relicensing study results.

Below are the proposed land use designations along with a definition of each designation:

- **Agricultural – Crops:** generally tilled land used to grow row crops. Boundaries follow the shape of the fields and include associated building (e.g. barns). This category also includes turf farms that grow sod.
- **Agricultural – Pasture/Grass:** Fields and associated facilities (barns and other outbuildings) used for animal grazing and for the growing of grasses for hay.
- **Natural/Undeveloped:** Vacant land, idle agriculture, rock outcrops, and barren areas. Vacant land is not maintained for any evident purpose and it does not support large plant growth. This designation also includes shrub cover, and some immature trees not larger or dense enough to be categorized as forested. It also includes areas that are more permanently shrubby.
- **Developed:** areas with a mixture of constructed materials and vegetation that is mostly in the form of grass.
- **Forested:** areas where tree canopy covers at least 50% of the land. Both coniferous and deciduous forests belong to this class.
- **Wetland:** Areas of vegetation, where the soil or substrate is periodically saturated with or covered with water.
- **Open Water:** areas of open water.
- **Recreation:** Lands managed for developed public recreational facilities and activities. This includes recreational sites described in the report for Study No. 3.6.2 *Recreation Facilities Inventory and Assessment Addendum* ([GSE & TRC, 2015b](#)) and recreation facilities managed by private landowners.⁶
- **Sensitive Resources (Privileged Overlay layer only):** RTE species habitat, areas within the Projects' boundaries that are considered sensitive for the presence of potentially eligible archaeological resources, and NRHP eligible historic structures.

The Sensitive Resources Designation overlay will be filed with FERC separately because it contains privileged location information regarding RTE habitats and archaeological resources. This overlay will be used by the Licensee when reviewing proposed non-project uses of Project lands and will aid the Licensee in managing Project lands.

⁶ Recreation facilities managed by private landowners are the Turners Falls Rod and Gun Club, the Franklin County Boat Club, and Turners Falls Schuetzen Verein.

LAND USE INVENTORY

[Table 4.6-2](#) summarizes the acreages within the Projects' boundaries in each of the proposed land use designations. [Table 4.6-3](#) summarizes the acreages within the Projects' boundaries in each of the proposed land use designations but excludes the Open Water designation.

[Figure 4.6-2](#) shows the proposed land use designations, conservation protections, and existing docks and water withdrawals permitted by the Licensee within the Projects' boundaries.

LAND USE INVENTORY

Table 4.6-1 Existing Land Use Categories and Proposed Land Use Designations

Existing Land Use Categories (2011 Categories)	Consolidated Existing Land Use Categories	Proposed Land Use Designations
Agricultural - Crops	Agricultural – Crops	Agricultural – Crops
Cropland		
Agricultural – Pasture/Grass	Agricultural – Pasture/Grass	Agricultural – Pasture/Grass
Pasture		
Barren	Natural/Undeveloped	Natural/Undeveloped
Restored		
Open Land		
Cemetery		
Commercial	Developed	Developed
Developed		
High Density Residential		
Industrial		
Junkyard		
Low Density Residential		
Marina		
Medium Density Residential		
Multi-Family Residential		
Nursery		
Orchard		
Powerline/Utility		
Transitional		
Transportation		
Urban Public/Institutional		
Very Low Density Residential		
Waste Disposal		
Forest	Forested	Forested
Open Water	Open Water	Open Water
Water	Wetland	Wetland
Forested Wetland		
Non-Forested Wetland		
Wetland		
Brushland/Successional	Shrub/Scrub	Natural/Undeveloped
Shrub/Scrub		
Participation Recreation	Recreation	Recreation
Water-Based Recreation		

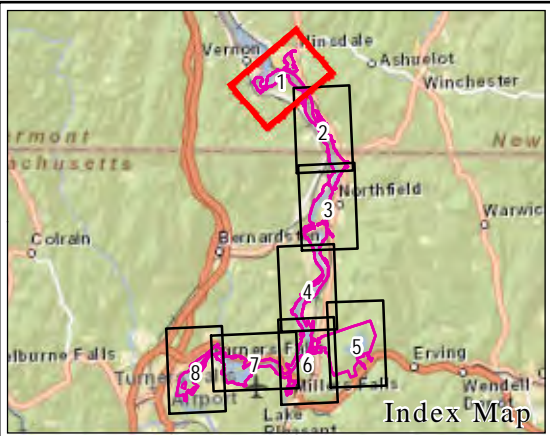
LAND USE INVENTORY

Table 4.6-2 Proposed Land Use Designation Acreages and Percentage of Land within the Projects' Boundaries

Proposed Land Use Designation	No. of Acres within the Projects' Boundaries	% of Land within the Projects' Boundaries
Open Water	2,647	36.5
Recreation	1,835	25.3
Agricultural – Crops	1,010	13.9
Forested	951	13.1
Wetland	396	5.5
Developed	333	4.6
Natural/Undeveloped	37	0.5
Agricultural – Pasture/Grass	37	0.5
Total	7,246	100%

Table 4.6-3 Proposed Land Use Designation Acreages and Percentage of Land (excluding Open Water) within the Projects' Boundaries

Proposed Land Use Designation	No. of Acres within the Projects' Boundaries	% of Land within the Projects' Boundaries
Recreation	1,835	39.9
Agricultural – Crops	1,010	22.0
Forested	951	20.7
Wetland	396	8.6
Developed	333	7.2
Natural/Undeveloped	37	0.8
Agricultural – Pasture/Grass	37	0.8
Total	4,599	100%



Legend

Project Boundary

LAND USE

- Agricultural - Crops
- Agricultural - Pasture/Grass
- Developed
- Forested
- Natural/Undeveloped
- Open Water
- Recreation
- Wetland



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FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

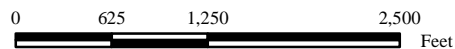
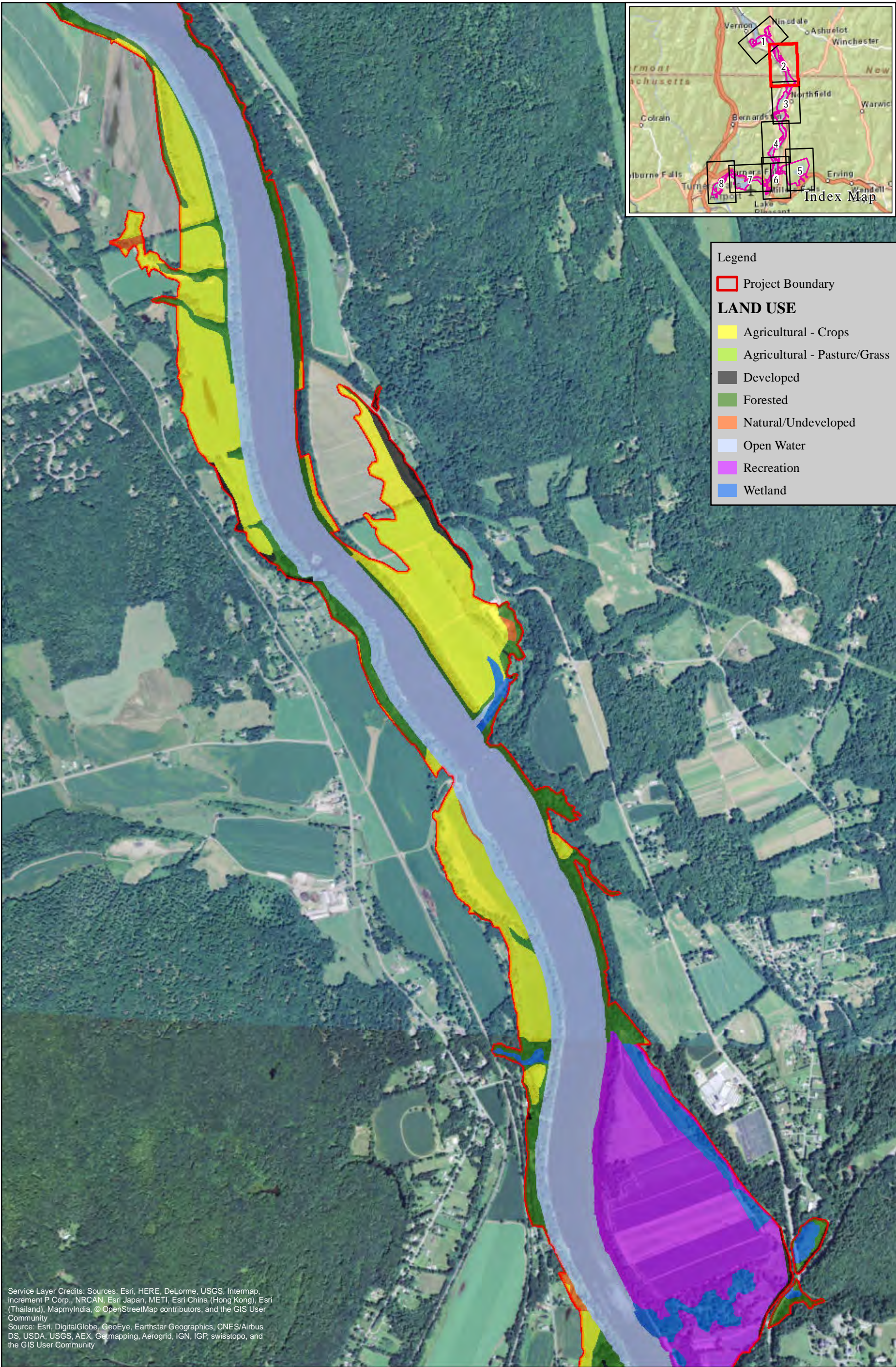


Figure 4.6-1 Map 1 of 8
Proposed Land Uses
within the Projects' Boundaries

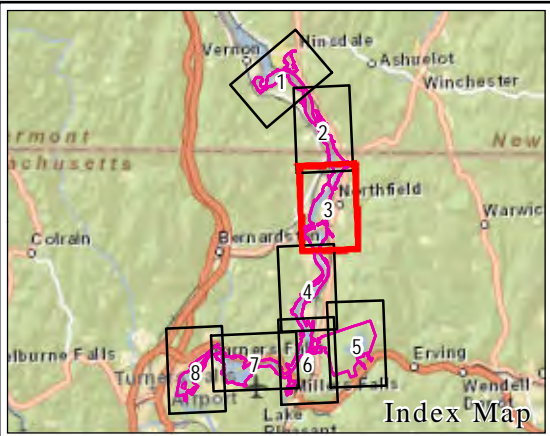


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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.6-1 Map 2 of 8
Proposed Land Uses
within the Projects' Boundaries

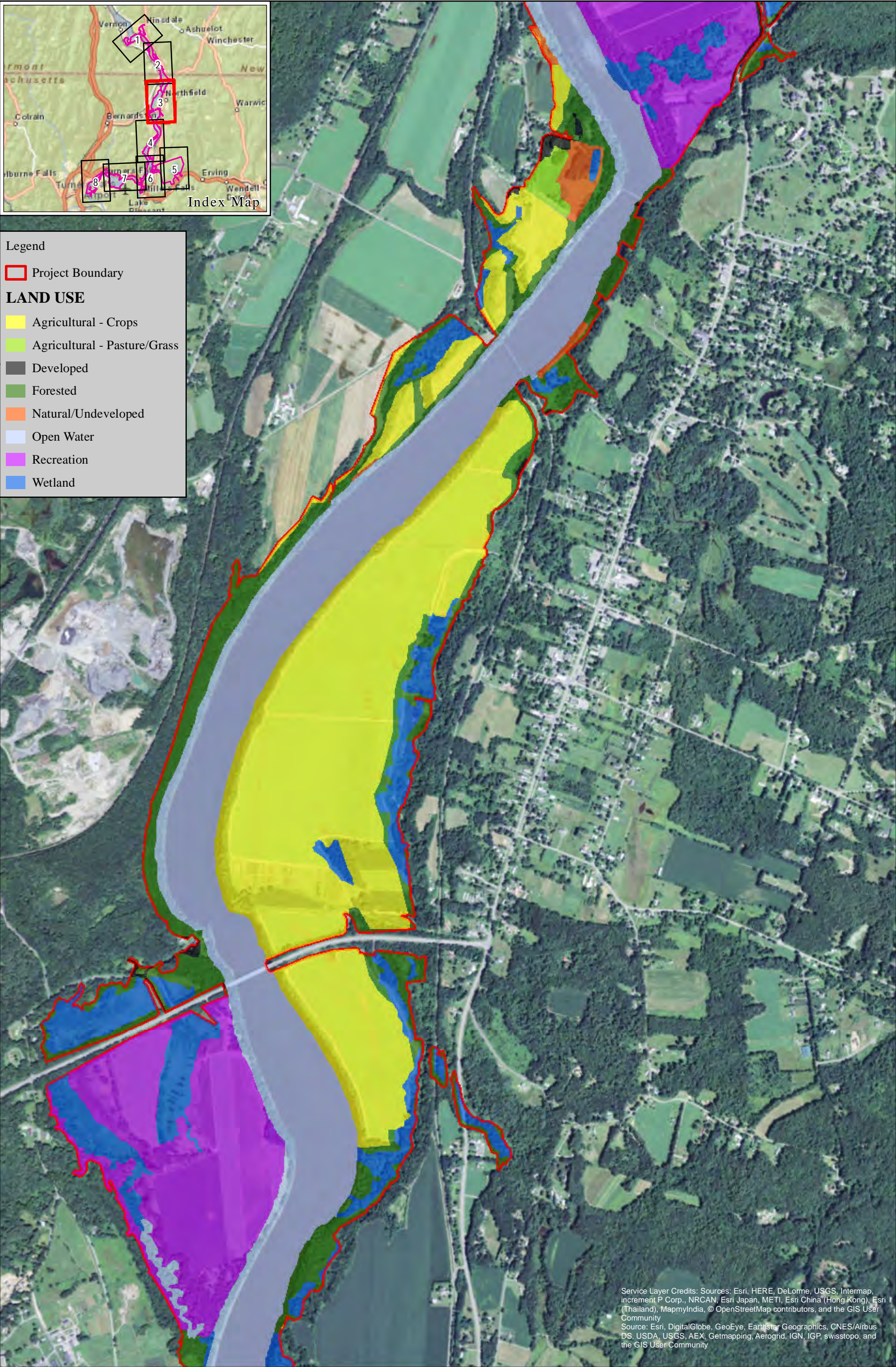


Legend

Project Boundary

LAND USE

- Agricultural - Crops
- Agricultural - Pasture/Grass
- Developed
- Forested
- Natural/Undeveloped
- Open Water
- Recreation
- Wetland



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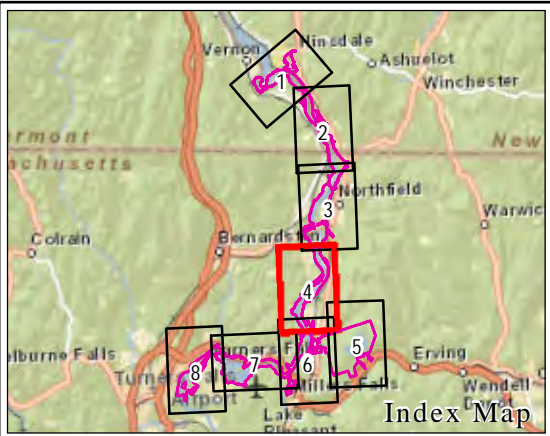


FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.6-1 Map 3 of 8
Proposed Land Uses
within the Projects' Boundaries

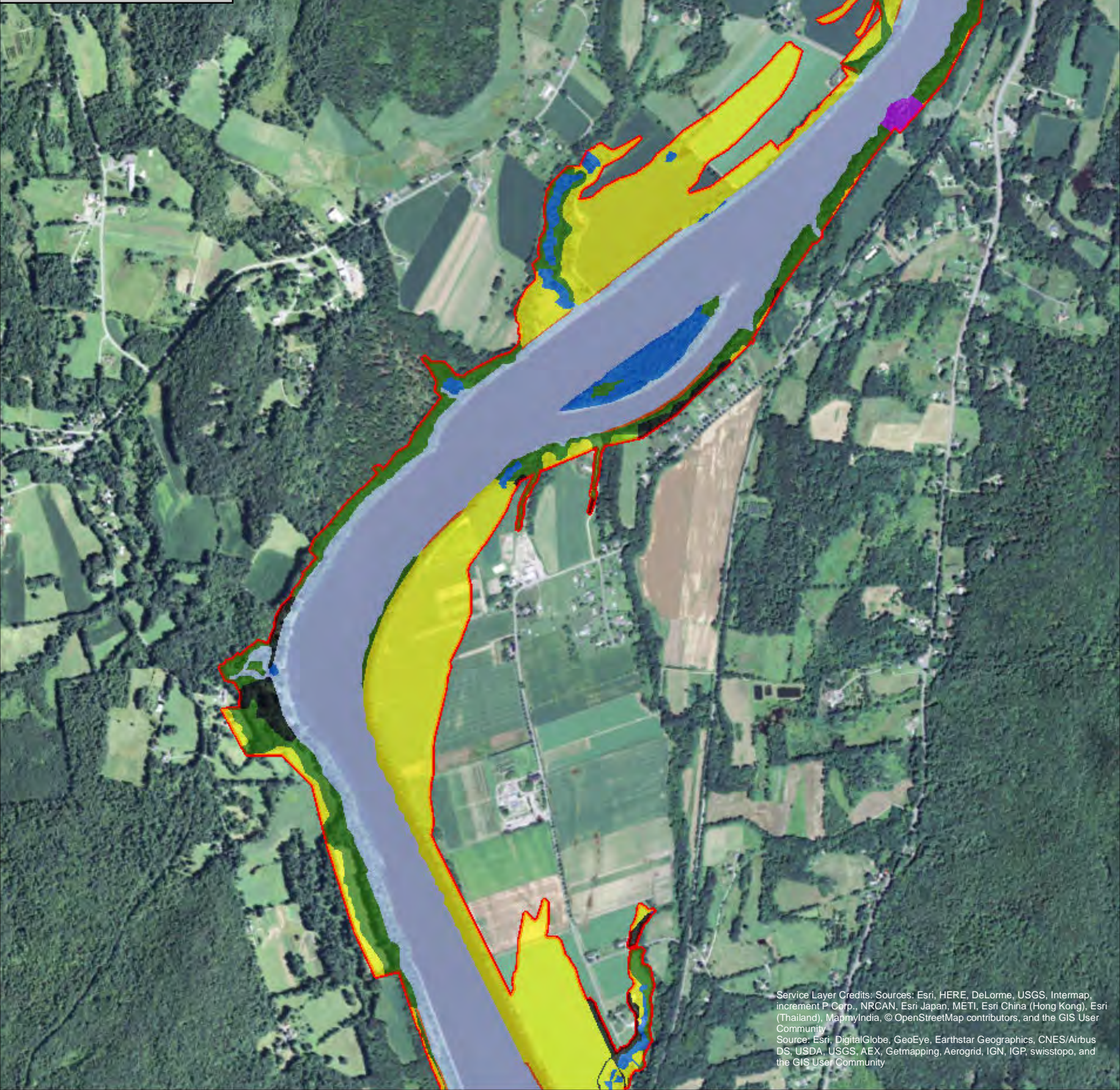


Legend

Project Boundary

LAND USE

- Agricultural - Crops
- Agricultural - Pasture/Grass
- Developed
- Forested
- Natural/Undeveloped
- Open Water
- Recreation
- Wetland



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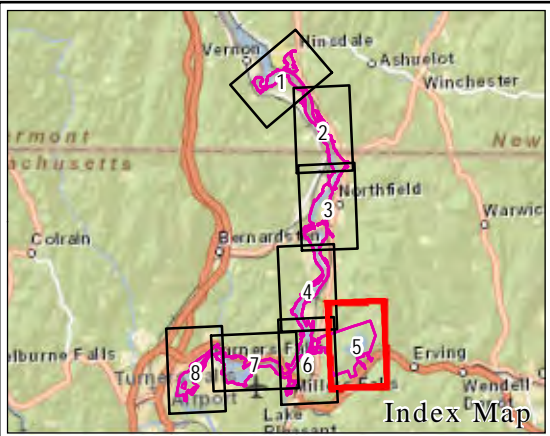


FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.6-1 Map 4 of 8
Proposed Land Uses
within the Projects' Boundaries



Legend

Project Boundary

LAND USE

Agricultural - Crops

Agricultural - Pasture/Grass

Developed

Forested

Natural/Undeveloped

Open Water

Recreation

Wetland

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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

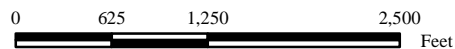
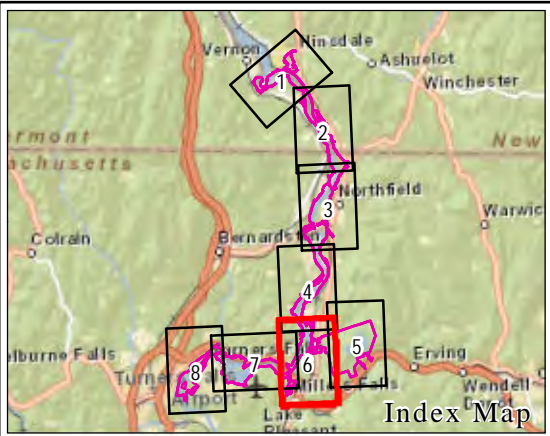


Figure 4.6-1 Map 5 of 8
Proposed Land Uses
within the Projects' Boundaries

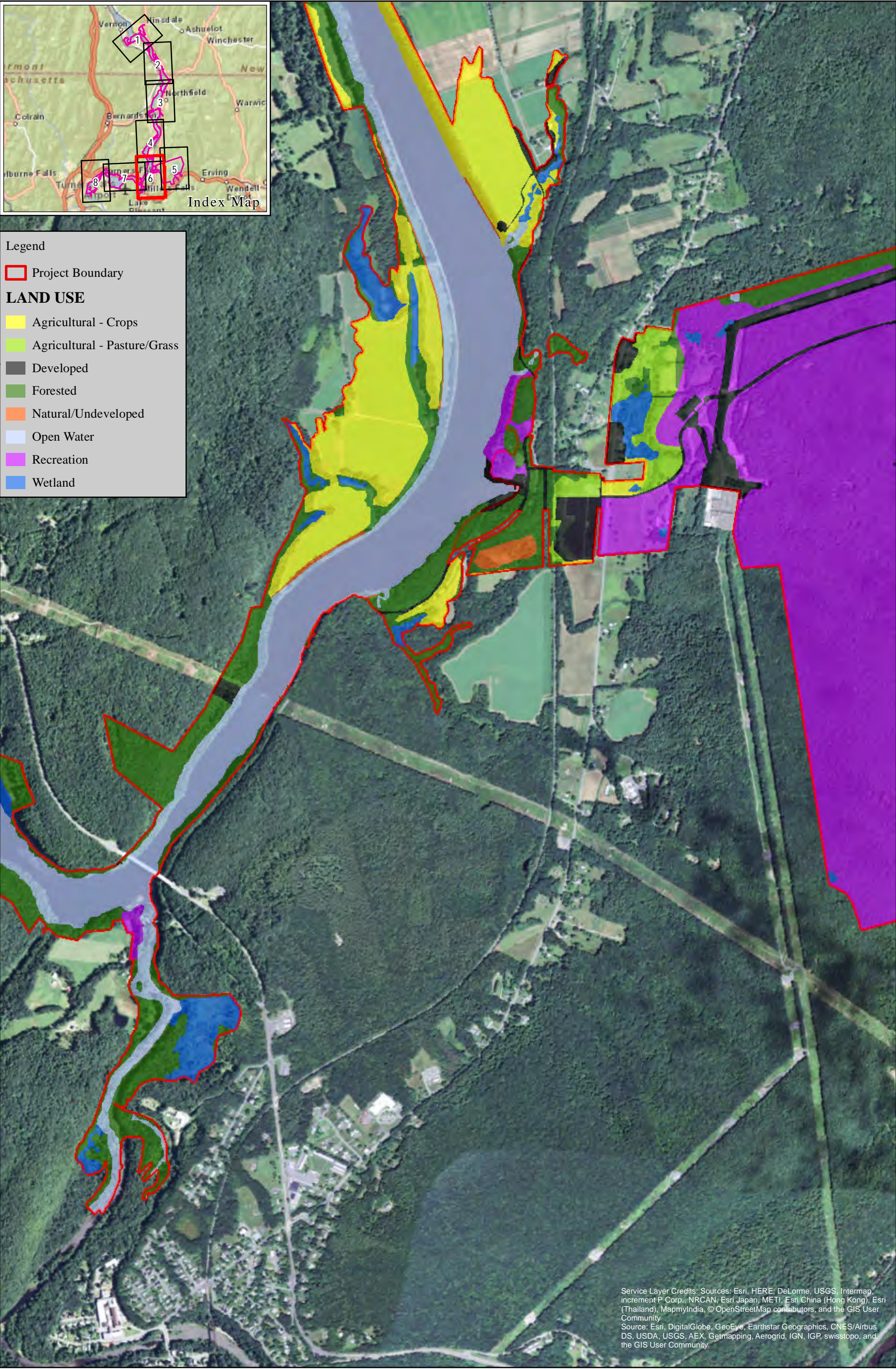


Legend

Project Boundary

LAND USE

- Agricultural - Crops
- Agricultural - Pasture/Grass
- Developed
- Forested
- Natural/Undeveloped
- Open Water
- Recreation
- Wetland



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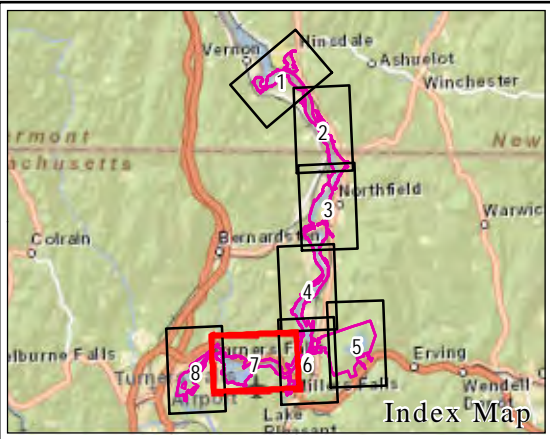


FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.6-1 Map 6 of 8
Proposed Land Uses
within the Projects' Boundaries

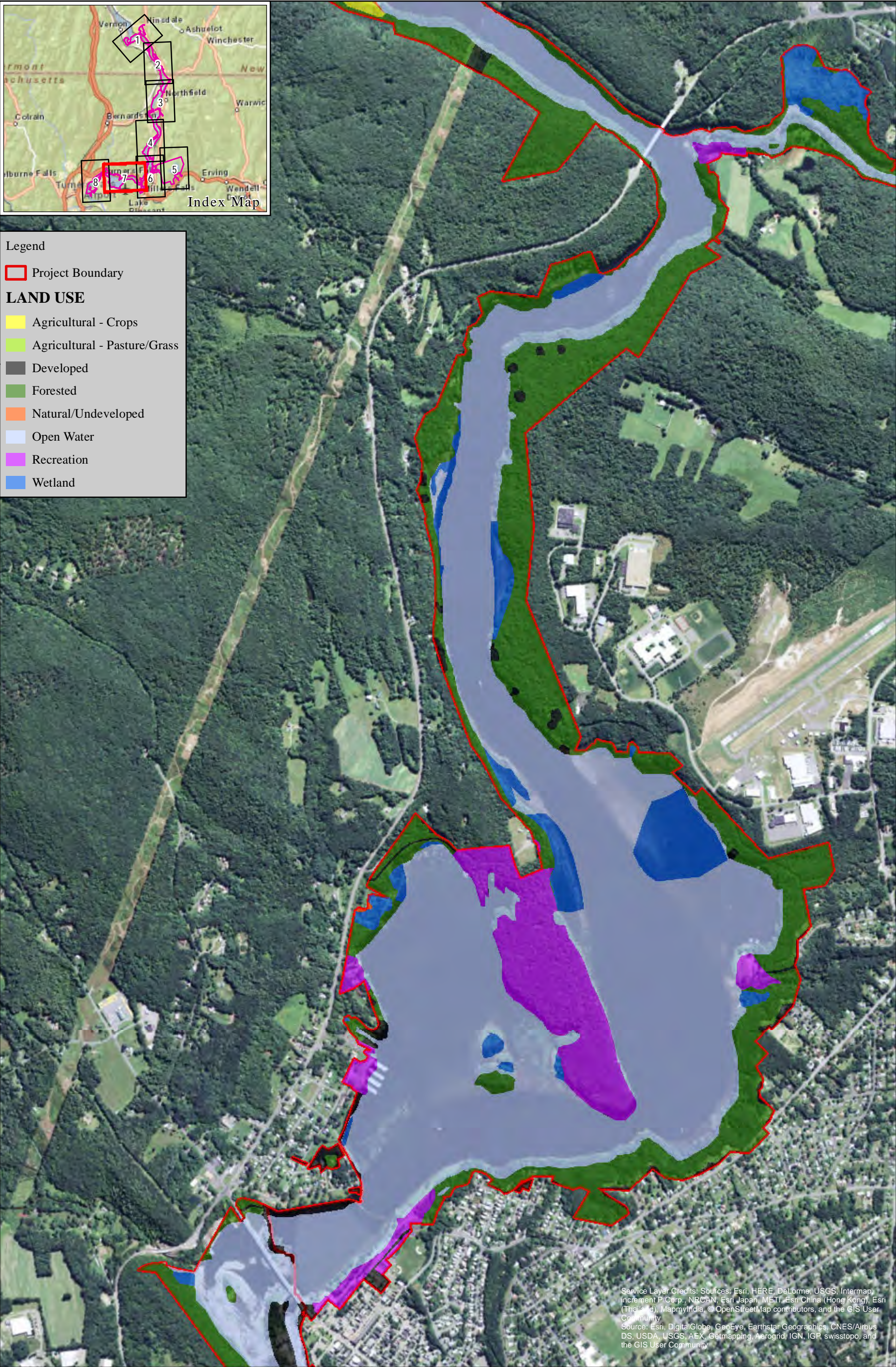


Legend

Project Boundary

LAND USE

- Agricultural - Crops
- Agricultural - Pasture/Grass
- Developed
- Forested
- Natural/Undeveloped
- Open Water
- Recreation
- Wetland



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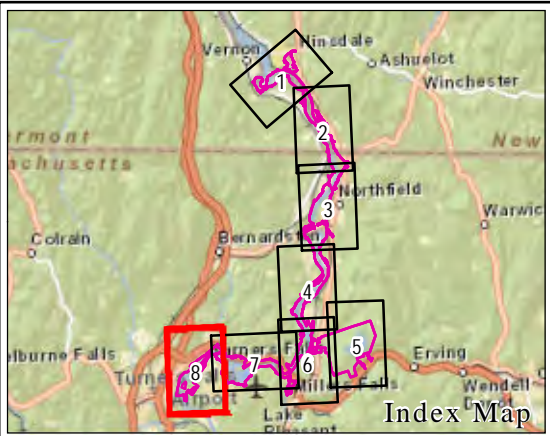


FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.6-1 Map 7 of 8
Proposed Land Uses
within the Projects' Boundaries

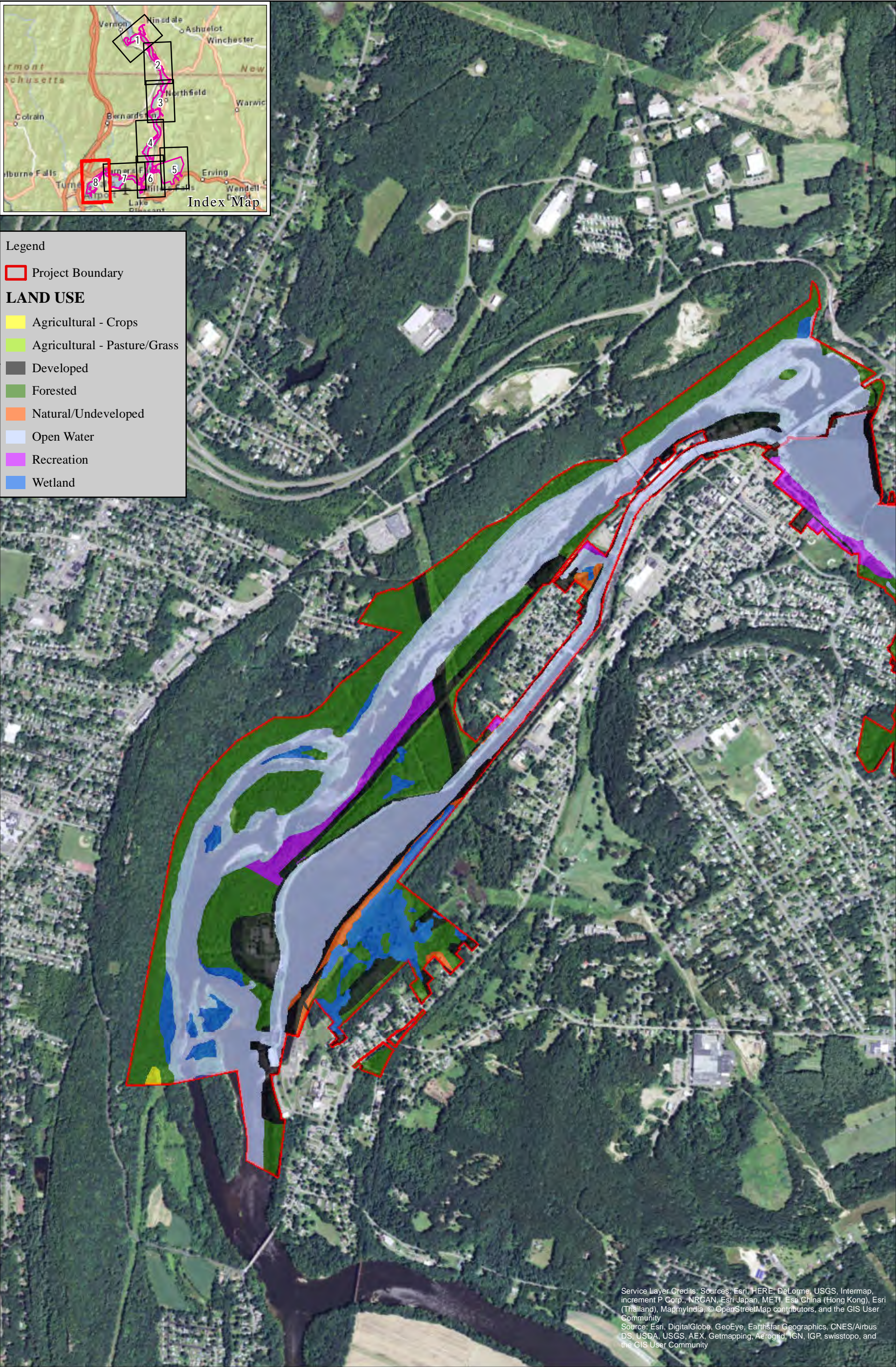


Legend

Project Boundary

LAND USE

- Agricultural - Crops
- Agricultural - Pasture/Grass
- Developed
- Forested
- Natural/Undeveloped
- Open Water
- Recreation
- Wetland



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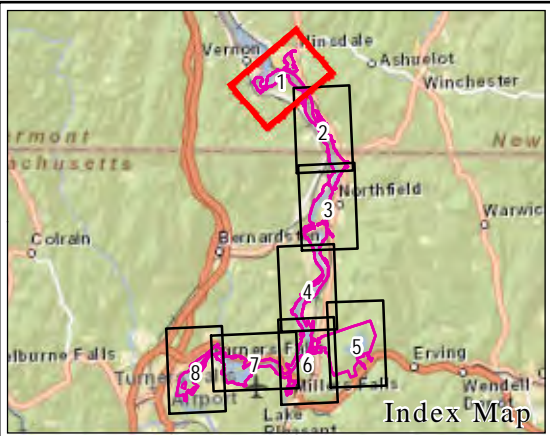


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Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.6-1 Map 8 of 8
Proposed Land Uses
within the Projects' Boundaries

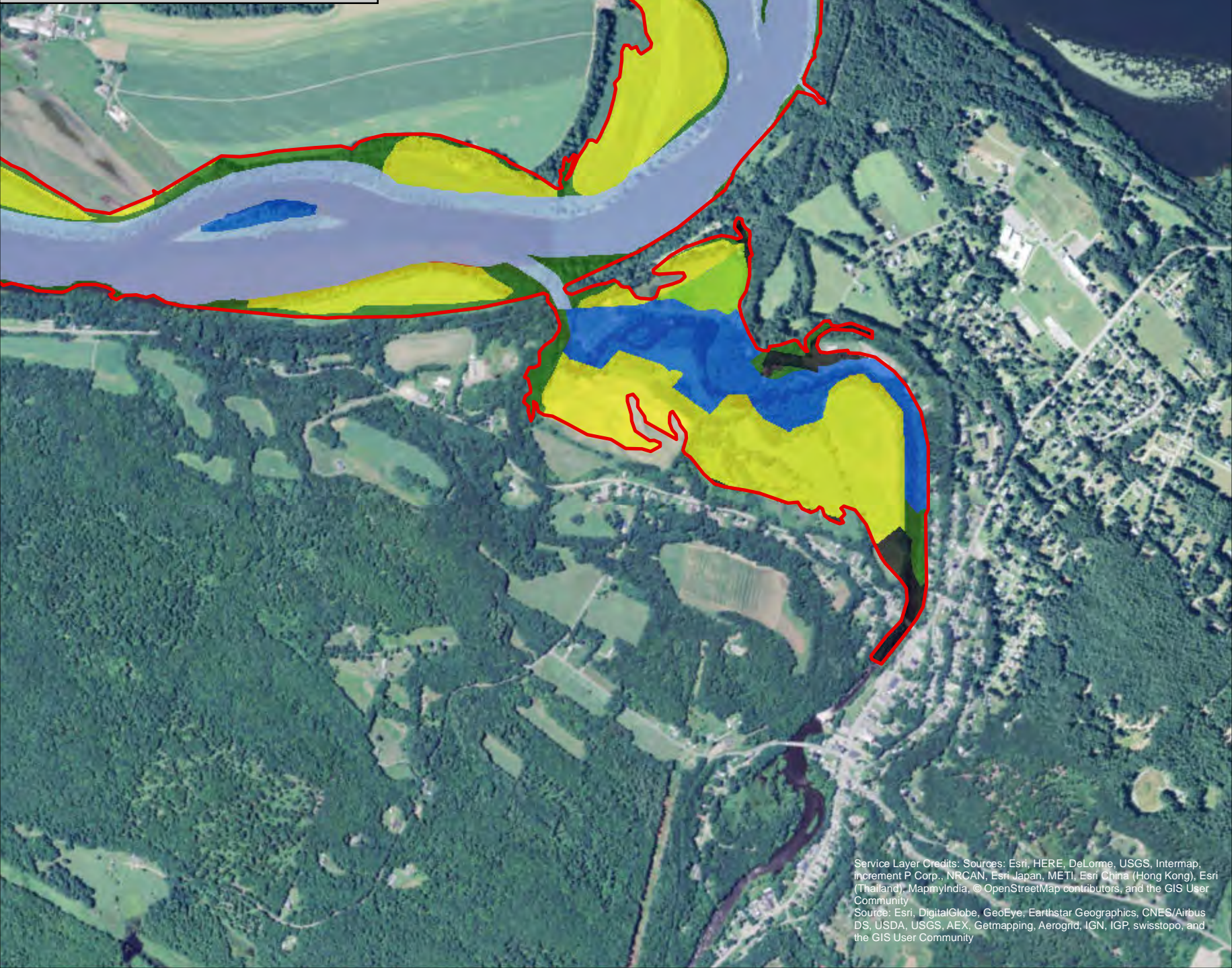


Legend

- Water Withdrawal
- Non-Project Dock
- Project Dock
- ▭ Project Boundary
- ▨ Agricultural Protection Areas
- ▨ Wildlife Management Protection Areas
- ▨ Recreation Protection Areas
- ▨ Natural, Undeveloped, and Scenic Protection Areas

Proposed Land Use Designation

- Agricultural - Crops
- Agricultural - Pasture/Grass
- Developed
- Forested
- Natural/Undeveloped
- Open Water
- Recreation
- Wetland



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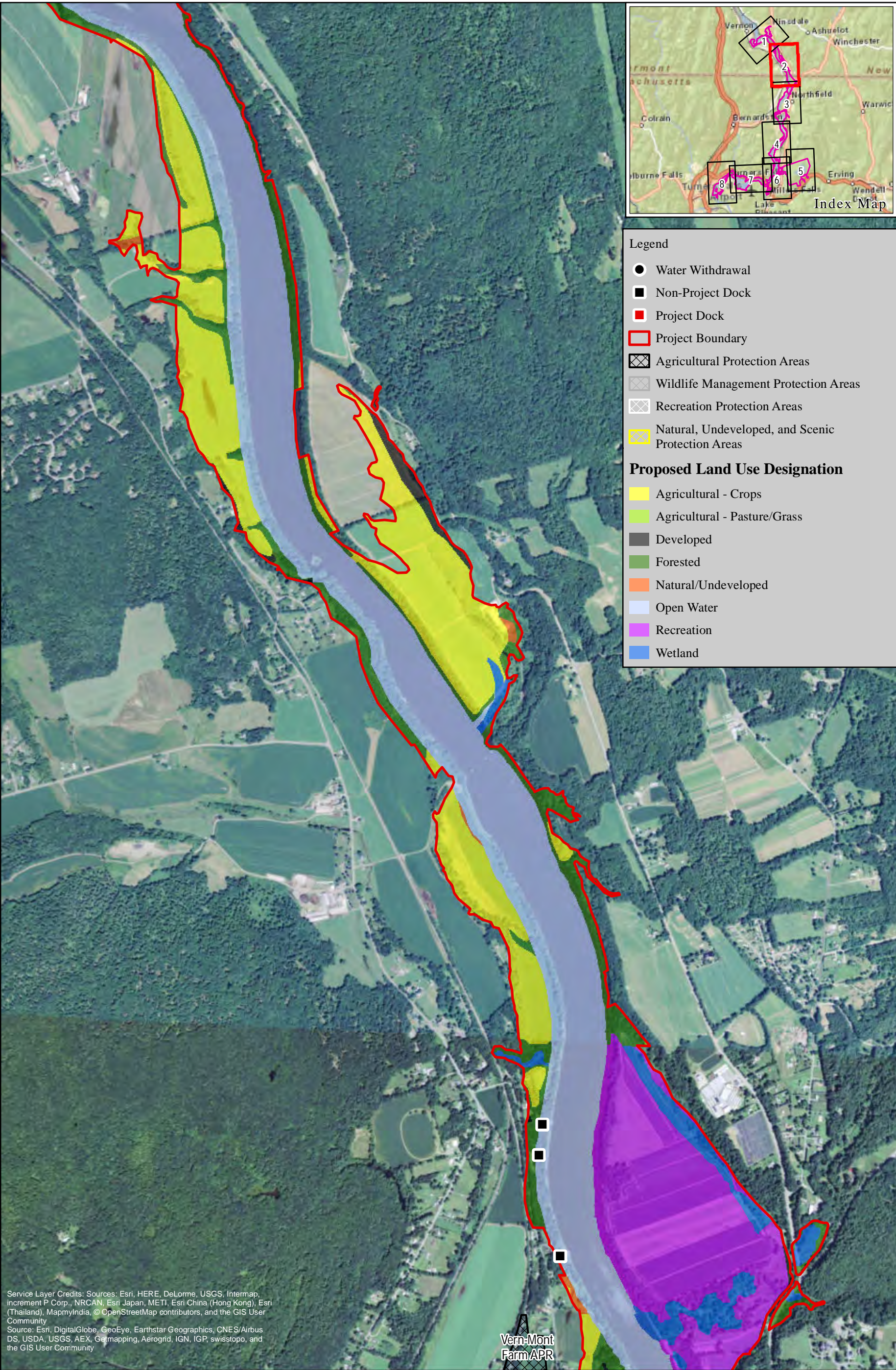


FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.6-2 Map 1 of 8
Proposed Land Use Designations, Conservation
Protections, and Existing Docks and Water
Withdrawals within the Projects' Boundaries.



FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

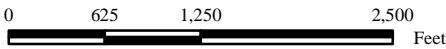
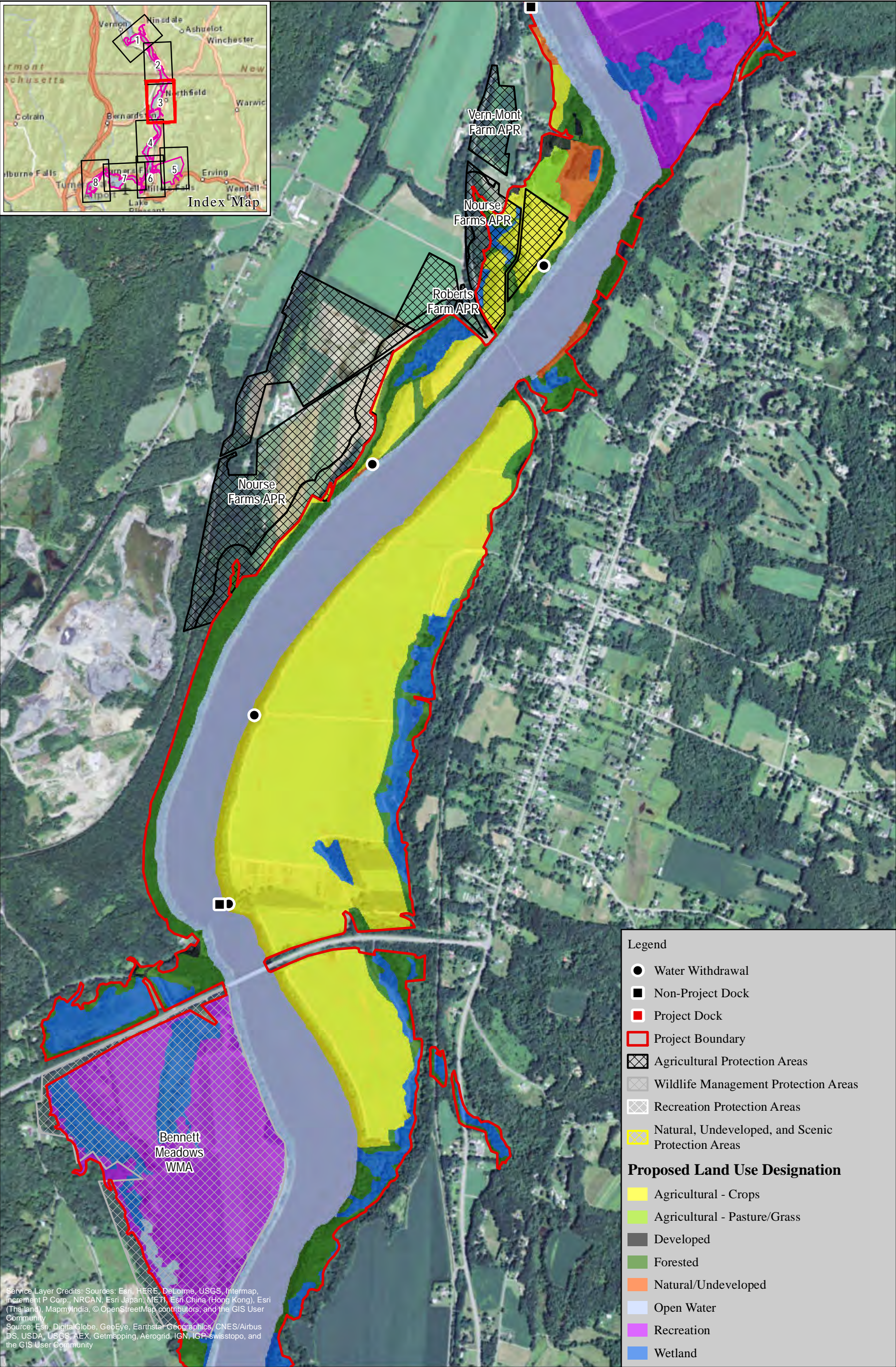
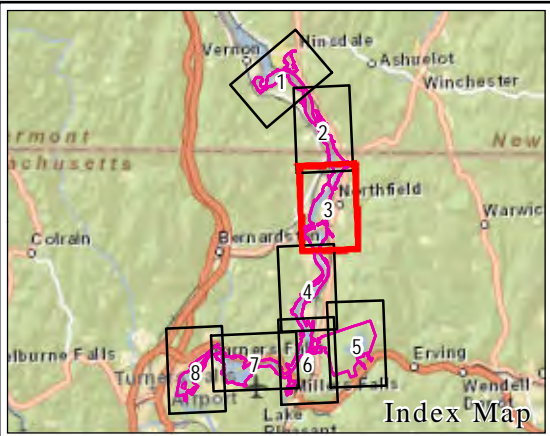


Figure 4.6-2 Map 2 of 8
Proposed Land Use Designations, Conservation
Protections, and Existing Docks and Water
Withdrawals within the Projects' Boundaries.



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- Legend**
- Water Withdrawal
 - Non-Project Dock
 - Project Dock
 - Project Boundary
 - ▨ Agricultural Protection Areas
 - ▨ Wildlife Management Protection Areas
 - ▨ Recreation Protection Areas
 - ▨ Natural, Undeveloped, and Scenic Protection Areas
- Proposed Land Use Designation**
- Agricultural - Crops
 - Agricultural - Pasture/Grass
 - Developed
 - Forested
 - Natural/Undeveloped
 - Open Water
 - Recreation
 - Wetland



FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

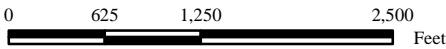
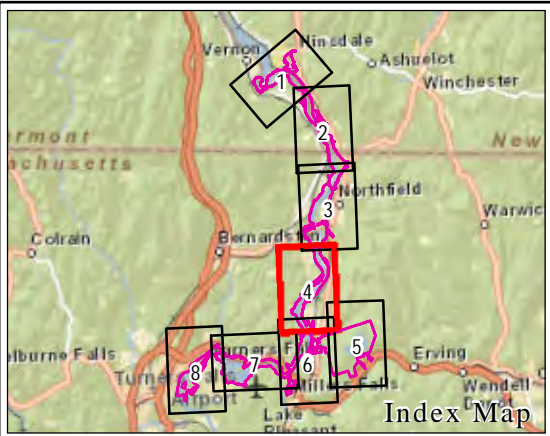


Figure 4.6-2 Map 3 of 8
Proposed Land Use Designations, Conservation
Protections, and Existing Docks and Water
Withdrawals within the Projects' Boundaries.

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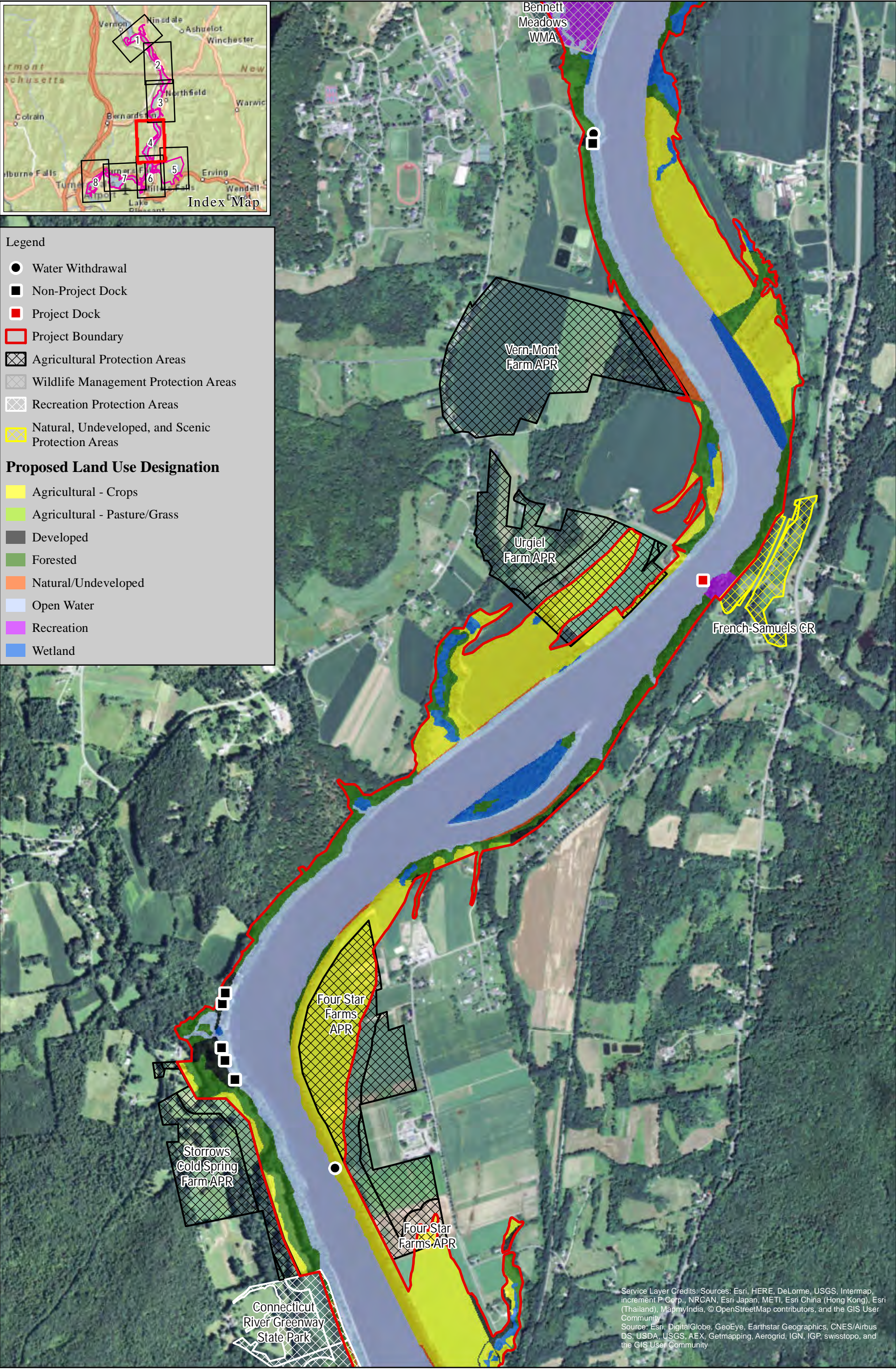


Legend

- Water Withdrawal
- Non-Project Dock
- Project Dock
- ▭ Project Boundary
- ▨ Agricultural Protection Areas
- ▨ Wildlife Management Protection Areas
- ▨ Recreation Protection Areas
- ▨ Natural, Undeveloped, and Scenic Protection Areas

Proposed Land Use Designation

- Agricultural - Crops
- Agricultural - Pasture/Grass
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- Natural/Undeveloped
- Open Water
- Recreation
- Wetland



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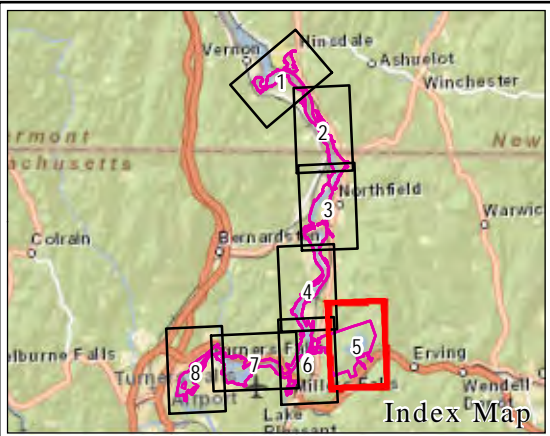


FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.6-2 Map 4 of 8
Proposed Land Use Designations, Conservation
Protections, and Existing Docks and Water
Withdrawals within the Projects' Boundaries.



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- Legend**
- Water Withdrawal
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 - Project Dock
 - Project Boundary
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 - Wetland

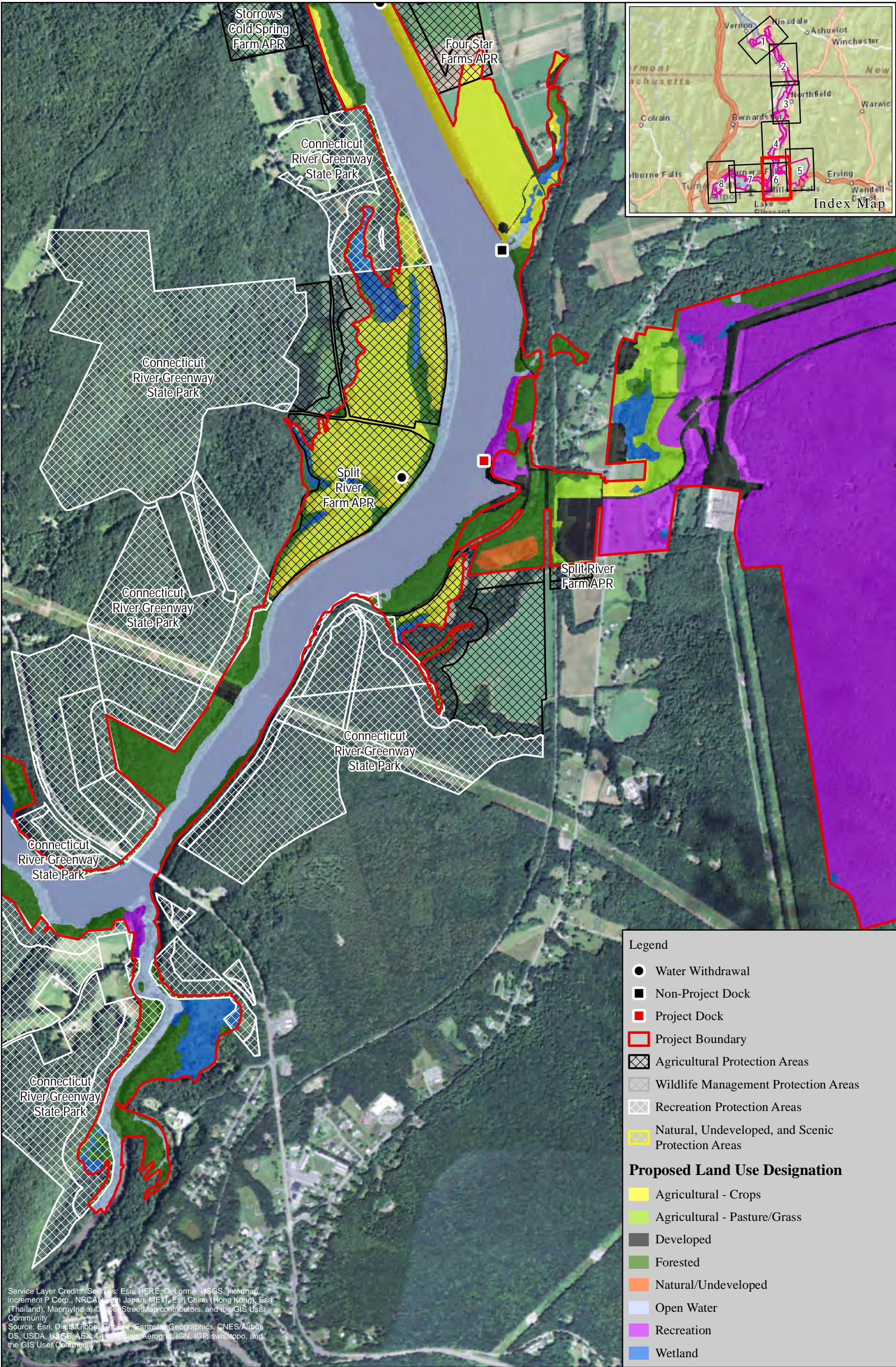


FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

0 625 1,250 2,500
Feet

Figure 4.6-2 Map 5 of 8
Proposed Land Use Designations, Conservation
Protections, and Existing Docks and Water
Withdrawals within the Projects' Boundaries.

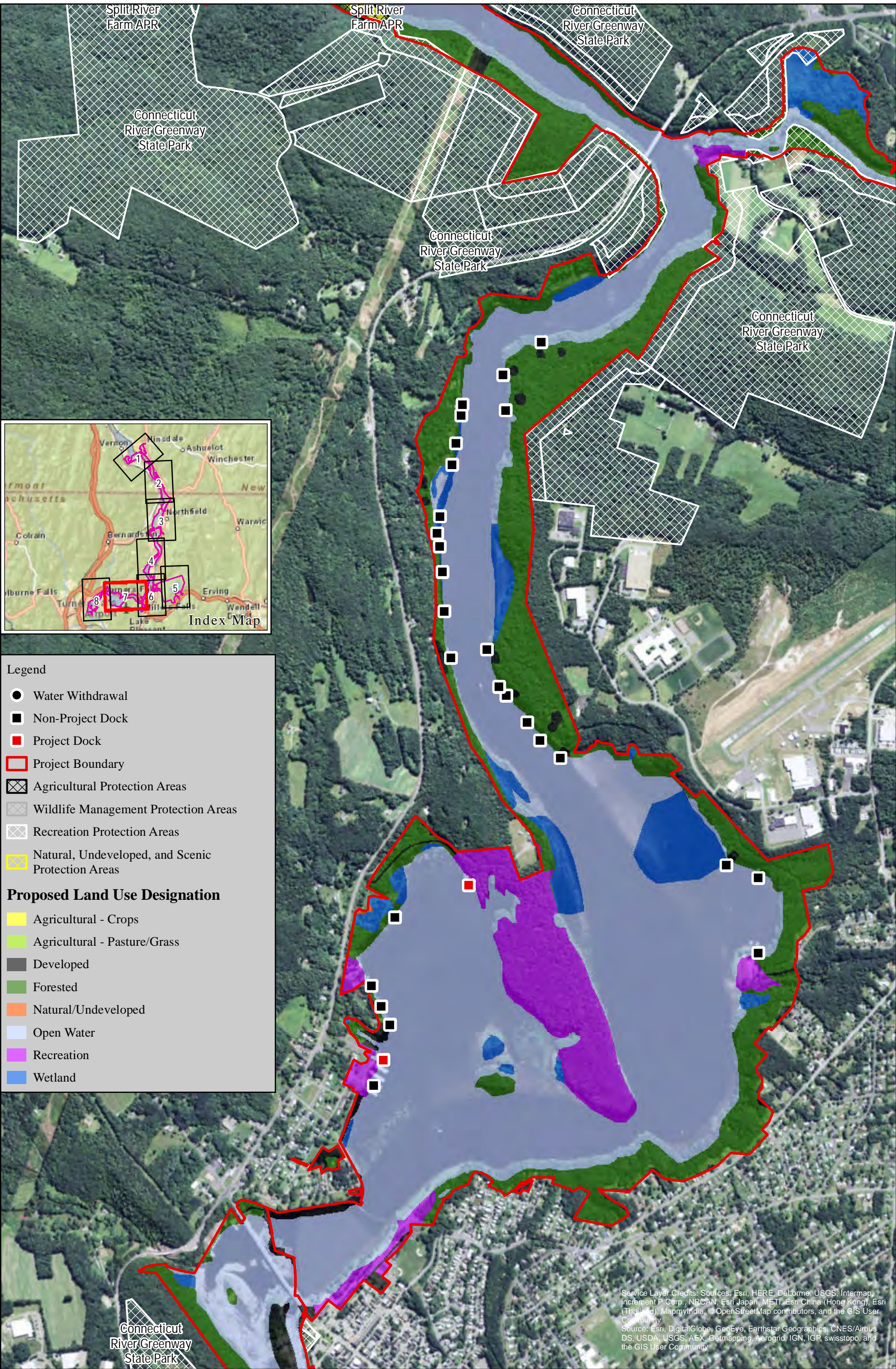


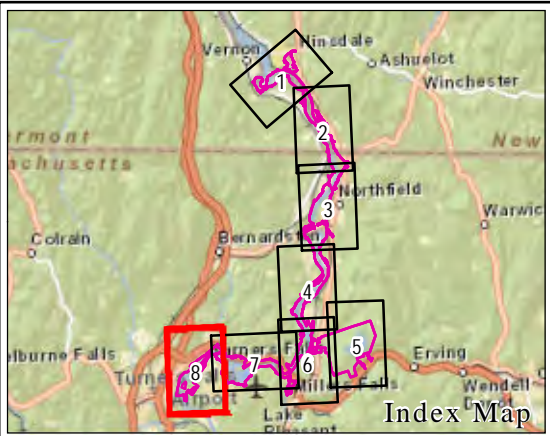
FIRSTLIGHT HYDRO GENERATING COMPANY
Northfield Mountain Pumped Storage Project No. 2485
Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

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Feet

Figure 4.6-2 Map 6 of 8
Proposed Land Use Designations, Conservation
Protections, and Existing Docks and Water
Withdrawals within the Projects' Boundaries.



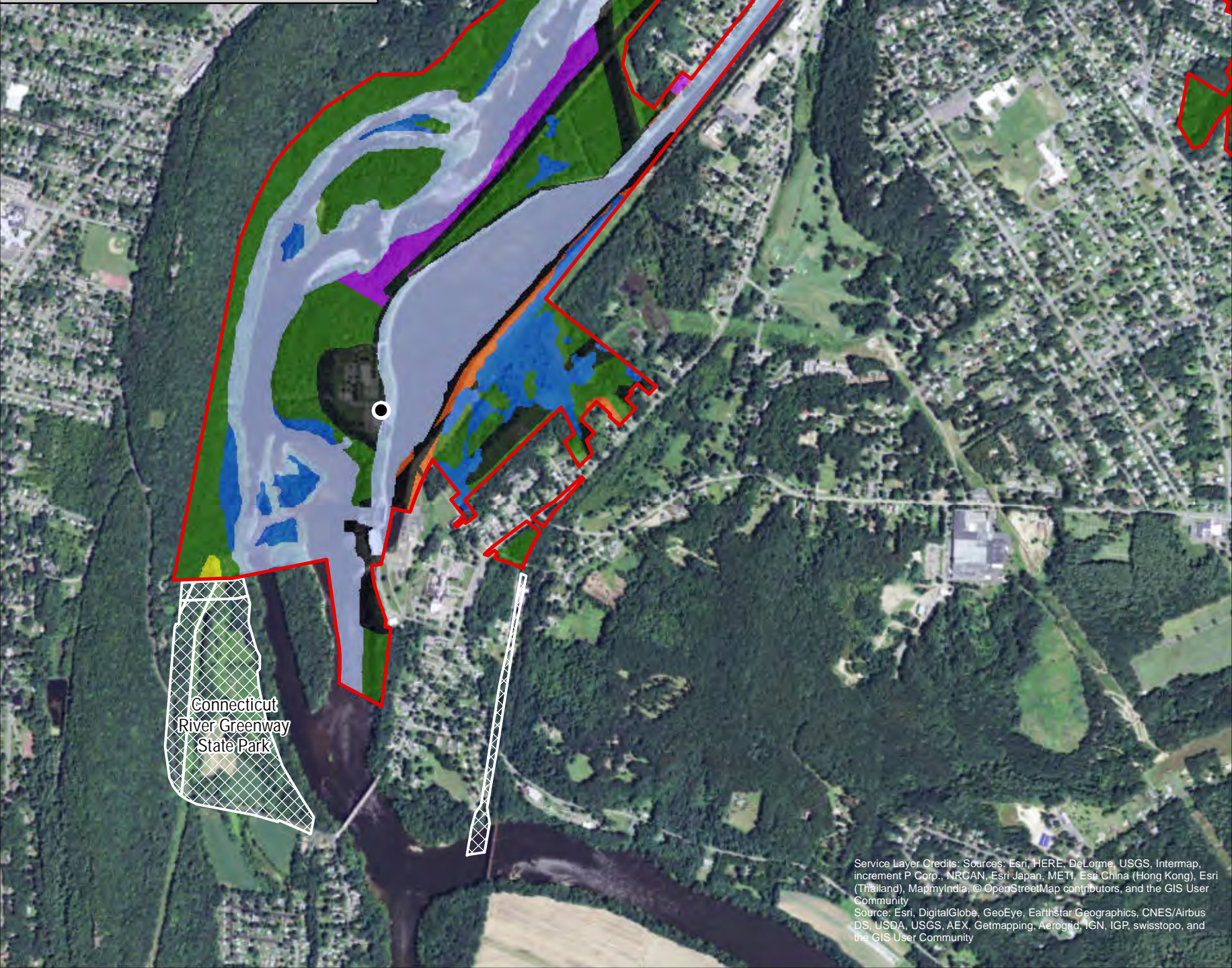


Legend

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Proposed Land Use Designation

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FIRSTLIGHT HYDRO GENERATING COMPANY
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Turners Falls Hydroelectric Project No. 1889

Study 3.6.5
Land Use Inventory

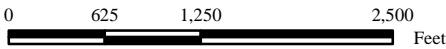


Figure 4.6-2 Map 8 of 8
Proposed Land Use Designations, Conservation
Protections, and Existing Docks and Water
Withdrawals within the Projects' Boundaries.

5 CONCLUSION

The majority of the existing land use within the Turners Falls Project and Northfield Mountain Project boundaries consists of forested, recreation, and agricultural – crop lands. The majority of the existing land use within 200 feet of the Projects’ boundaries consists of forested, developed, and agricultural – crop lands. There are approximately 414 acres of lands within the Projects’ boundaries and an additional 301 acres of lands within 200 feet of the Projects’ boundaries that are subject to conservation protection. The purpose of the conservation protections fall into four categories: wildlife management (specifically, Bennett Meadows Wildlife Management Area), recreation (the Connecticut River Greenway State Park), natural, undeveloped, and scenic (French-Samuels Farm CR), and agricultural preservation. The Licensee permits non-project uses of Project lands in accordance with the provisions of the FERC licenses. Non-project uses include a number of uses such as camps (24) within the Projects boundaries, docks (46), landscape uses for abutters (8), water withdrawals (8). In addition, FirstLight grants permissions for short term organized events such as running races, state cross-country meets, horseback riding, and triathlons.

As demonstrated in the relicensing study reports referred to in this Report, the Licensee’s land management decisions have been consistent with the existing land use categories and been protective of sensitive resources at the Projects. The Licensee has proposed land use designations, which, in almost all cases, are the same as the existing land use categories. The proposed land use designations maps will be readily available via GIS mapping and will be updated as information changes. The sensitive resources overlay is considered privileged. It will be used by the Licensee when reviewing any proposed non-project use of Project lands and will aid the Licensee in managing Project lands to protect sensitive resources.

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