

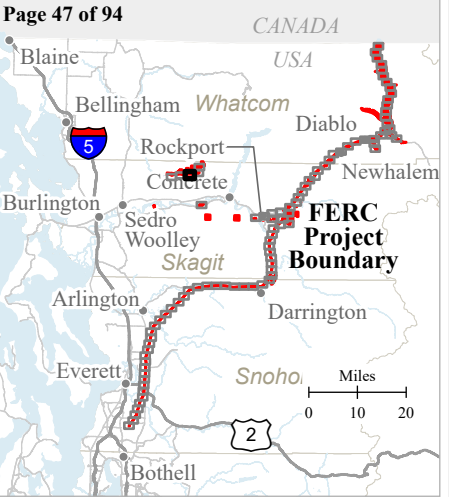
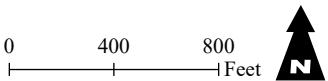
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MapBook.aprx



**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**

- FERC Project Boundary
- Mitigation Parcel
- Other Road
- Streams

- | Invasive Line | Invasive Polygon |
|---------------|------------------|
| CIAR | PHAR |
| GERO | RUBI |
| RUBI | |



Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

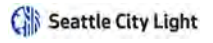
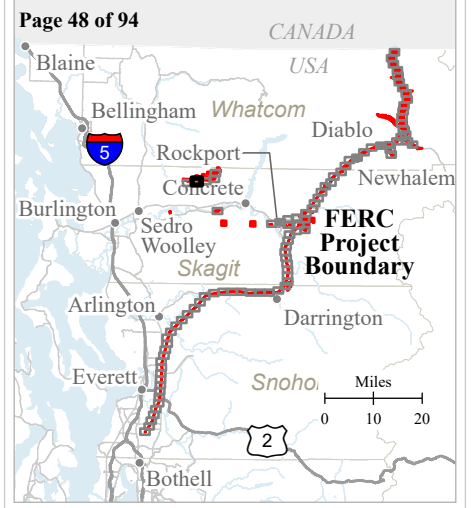
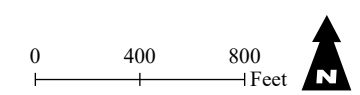
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit HydroReference\03 MXDs Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Mitigation Parcel
- Other Road
- Streams

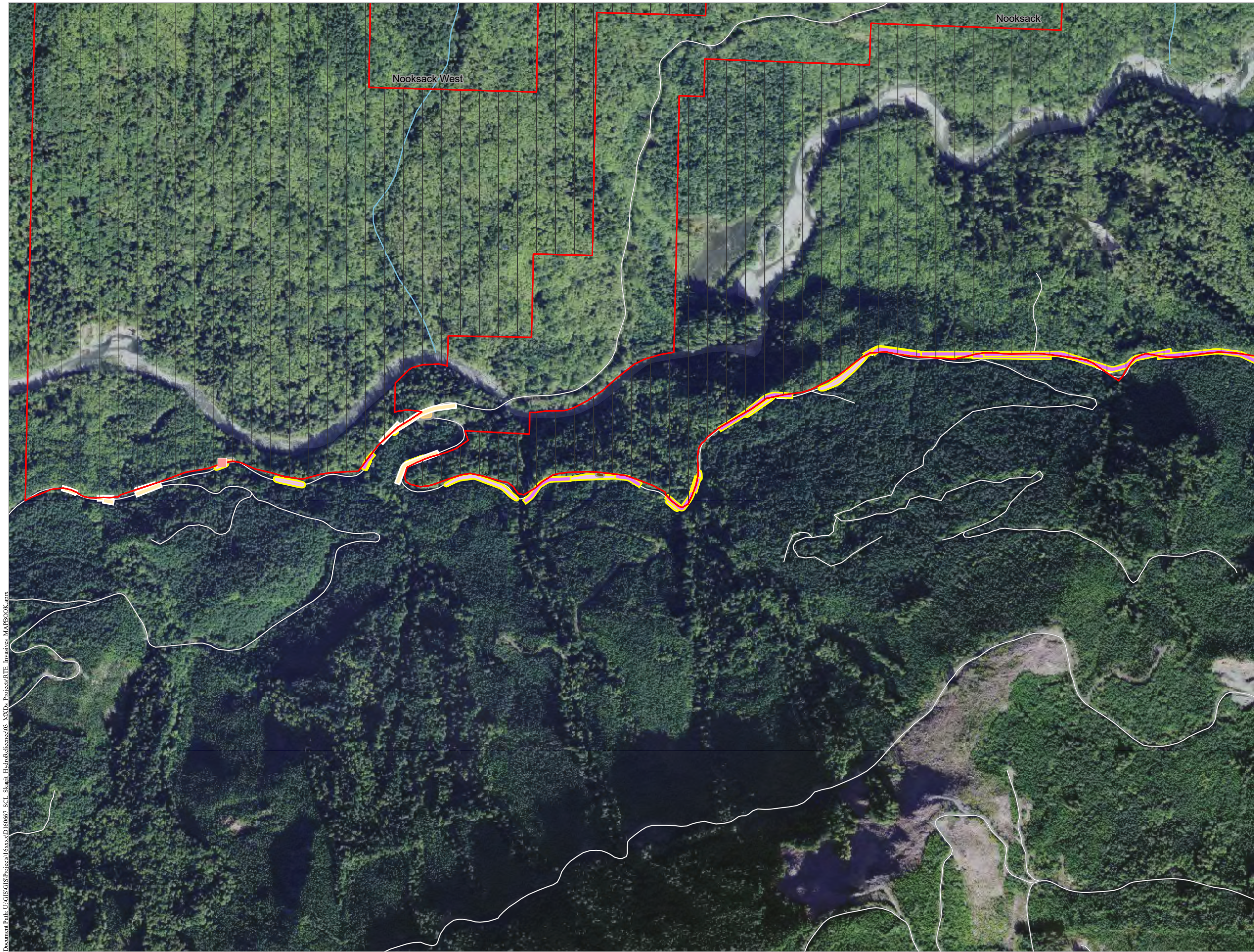
- | Invasive Line | Invasive Polygon |
|---------------|------------------|
| CIAR | CIAR |
| GERO | RUBI |
| PHAR | |



SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

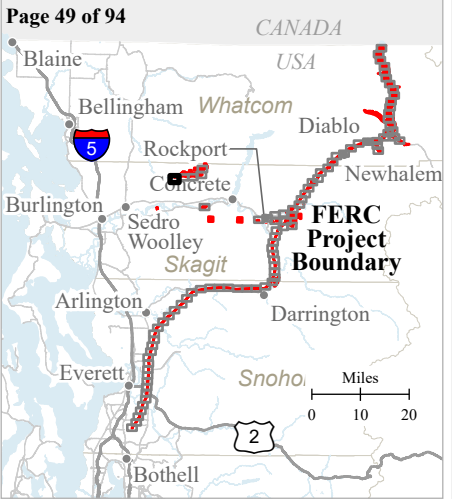
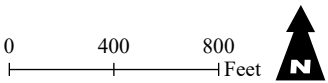
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\Reference\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Mitigation Parcel
- Other Road
- Streams

- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| BUDA | CIAR | CIAR |
| | GERO | GERO |
| | | PHAR |
| | | RUBI |

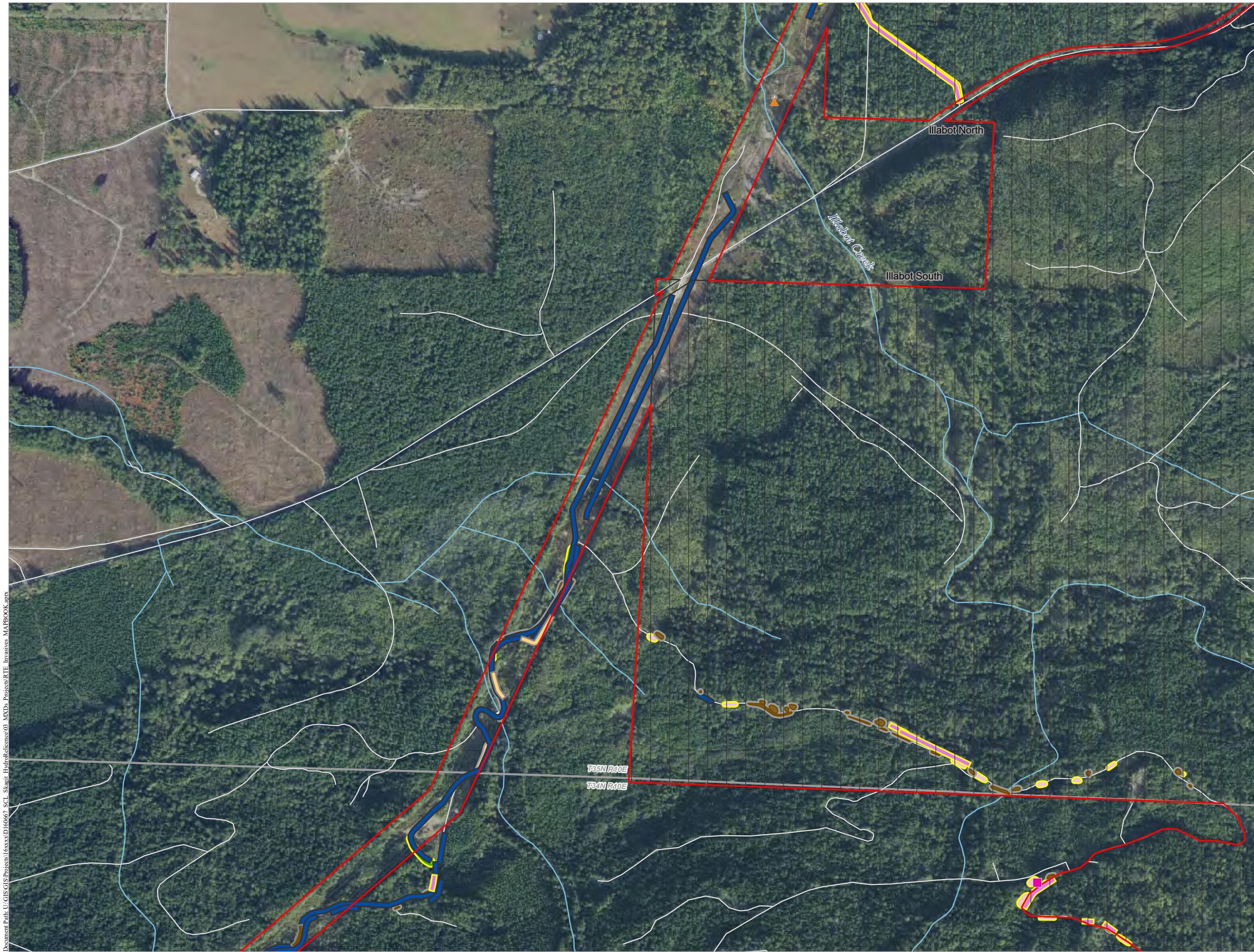


Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

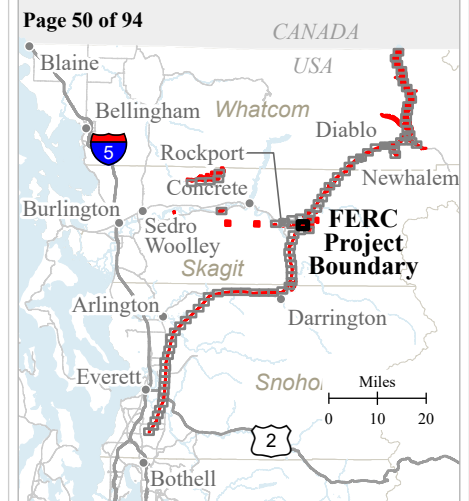
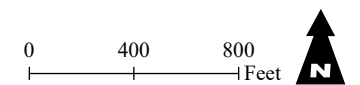
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Mitigation Parcel
- Other Road
- Streams

- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| CAPY | GERO | CLVI |
| PORE | PHAR | CYSC |
| | RUBI | GERO |
| | TAVU | PHAR |
| | | RUBI |
| | | TAVU |

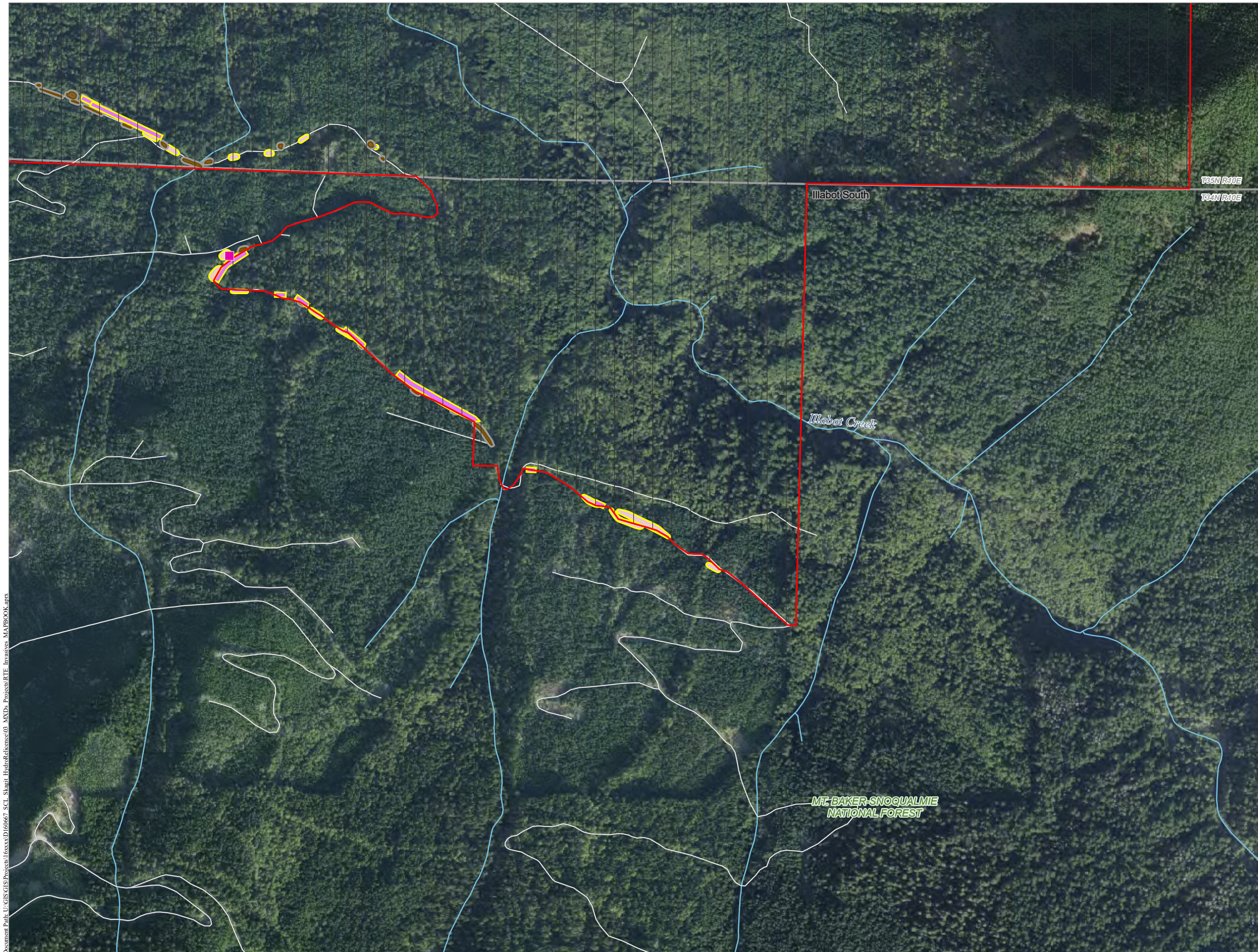


Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

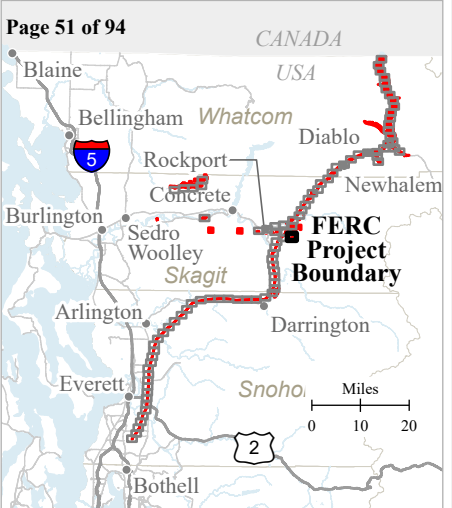
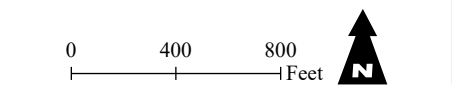
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Mitigation Parcel
- Other Road
- Streams

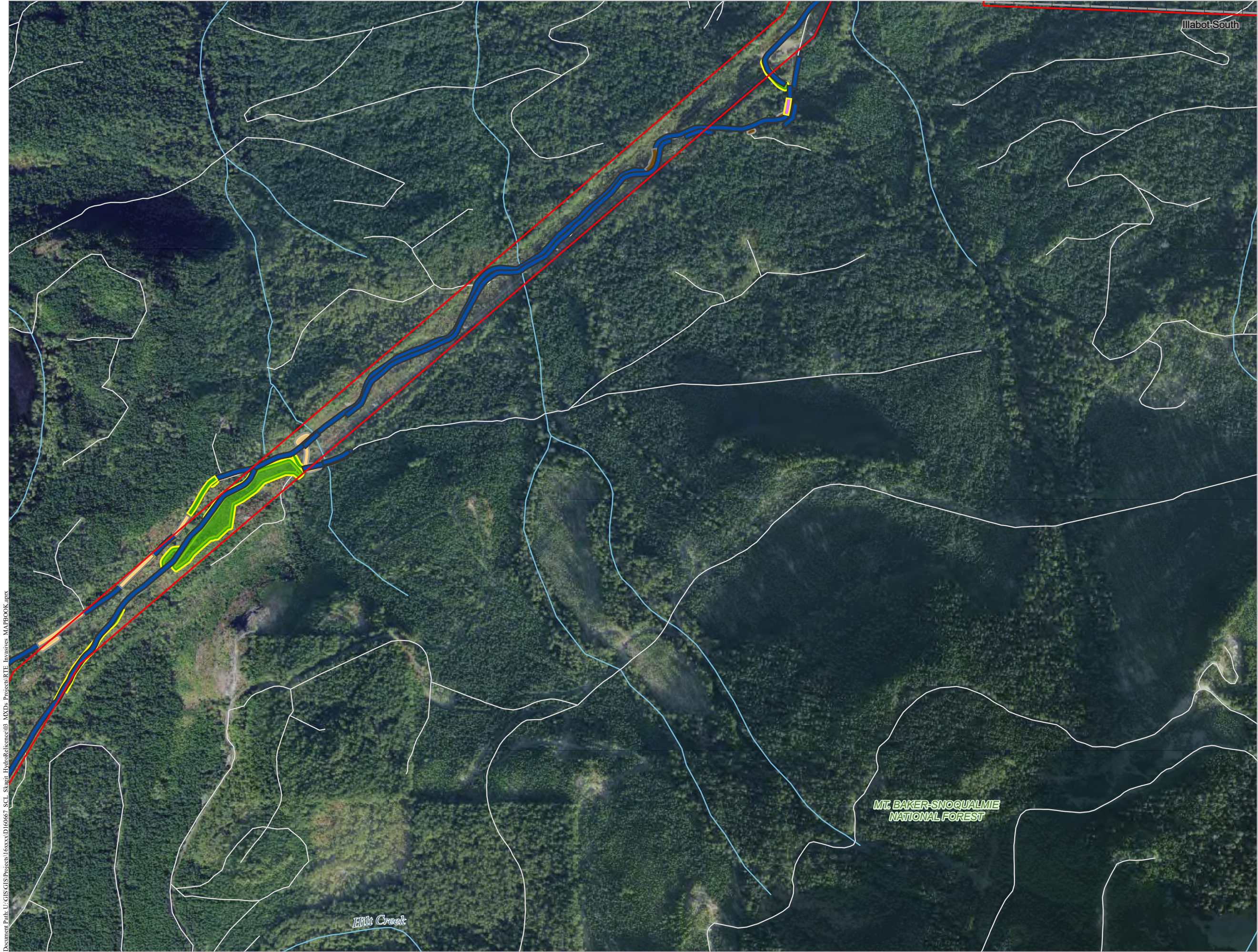
- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| CAPY | GERO | GERO |
| | | RUBI |



Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

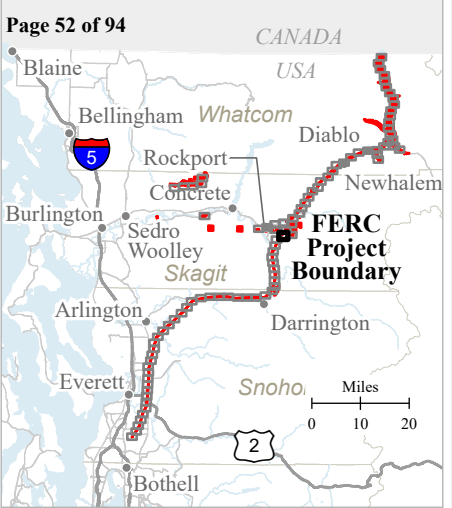
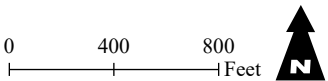
Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].



TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK

- FERC Project Boundary
- Mitigation Parcel
- Other Road
- Streams









- | Invasive Line | Invasive Polygon |
|---------------|------------------|
| CYSC | CIAR |
| GERO | CYSC |
| PHAR | PHAR |
| RUBI | RUBI |
| TAVU | |

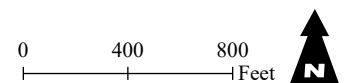


Seattle City Light


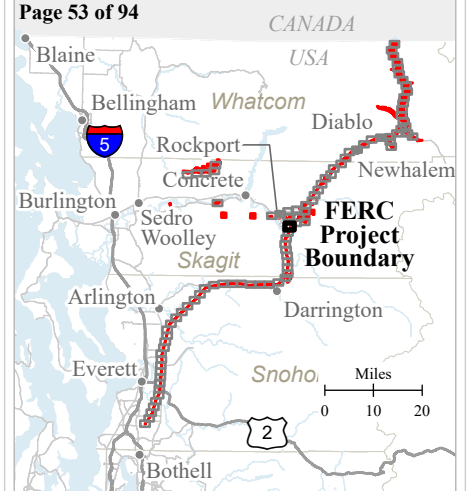
SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Invasive Line	Invasive Polygon
 CYSC	 CIAR
 GERO	 CYSC
 PHAR	 PHAR
 TAVU	 TAVU



Page 53 of 94

 Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

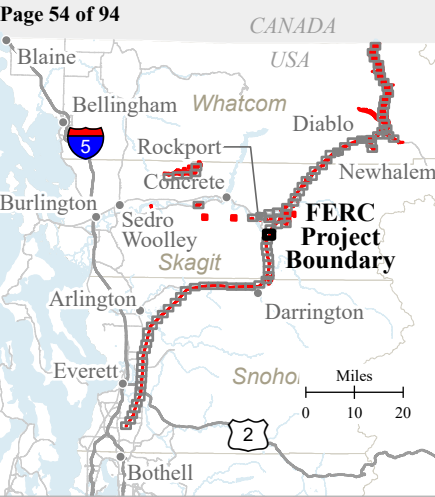
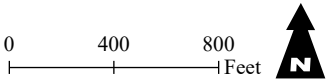
Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].



**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | Invasive Line | Invasive Polygon |
|---------------|------------------|
| GERO | CYSC |
| TAVU | PHAR |
| | RUBI |
| | SOAU |
| | TAVU |

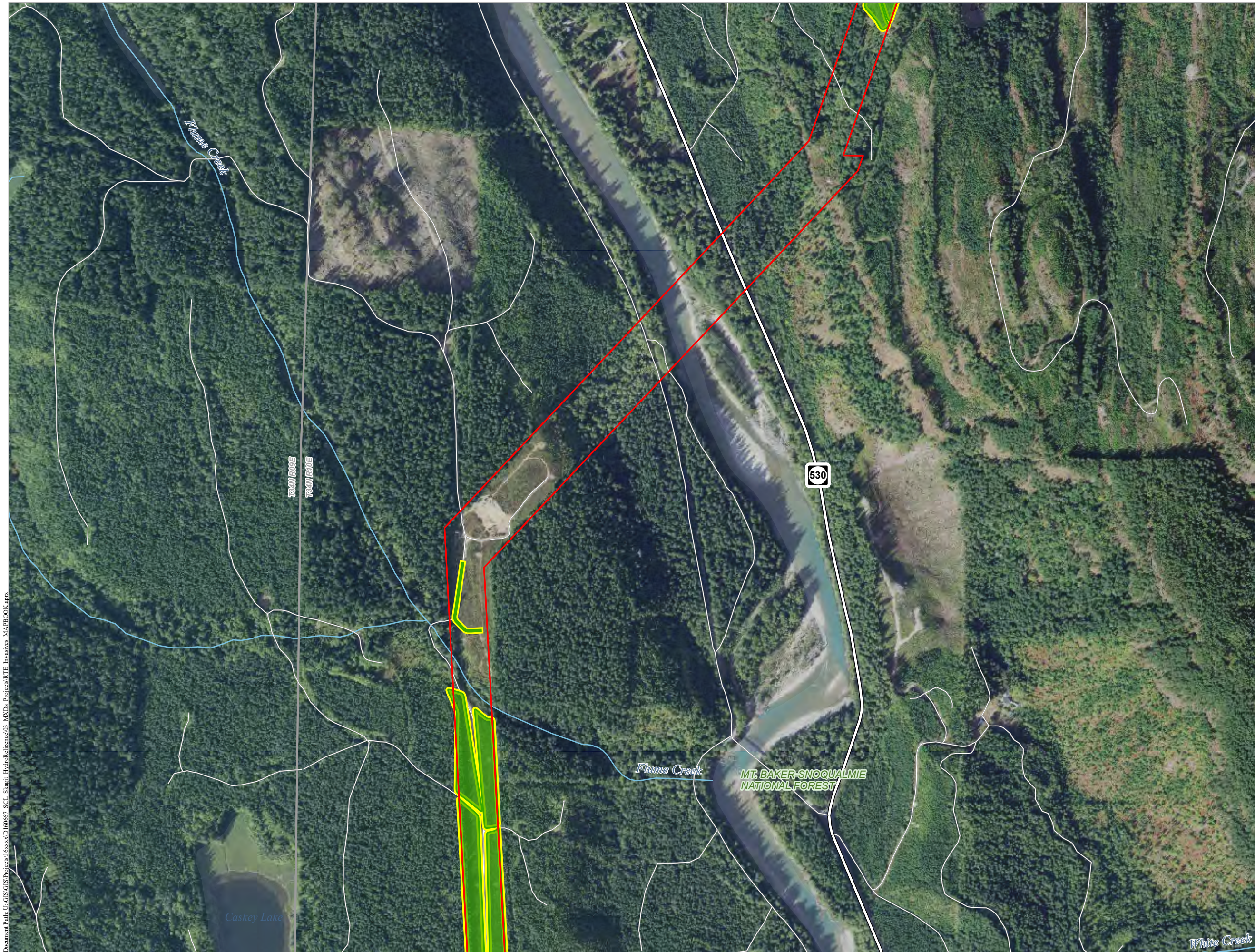


Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

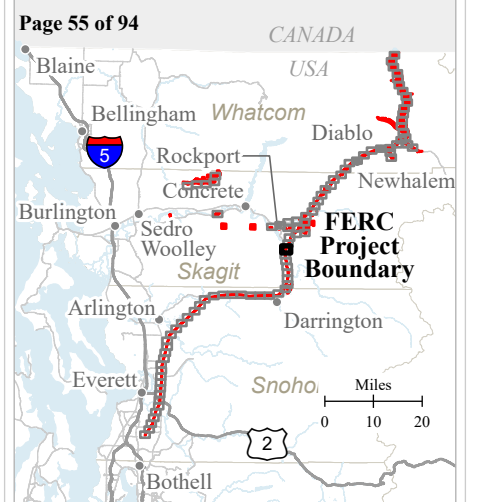
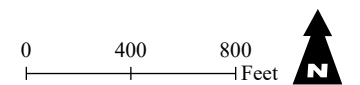
Document Path: U:\GIS\Projects\6xxxxD\60667 SCL Skagit HydroReference\03 MXDs\Projects\RTI Invasives MapBook.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | Invasive Line | Invasive Polygon |
|---------------|------------------|
| CYSC | CYSC |



Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

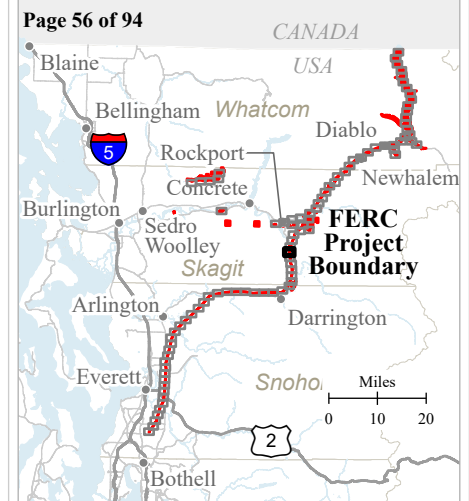
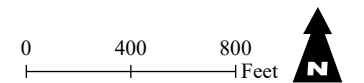
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams






Invasive Point	Invasive Line	Invasive Polygon
CEDI	CYSC	CYSC
CEST		RUBI
		TAVU

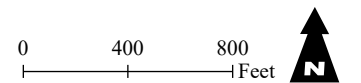


Seattle City Light


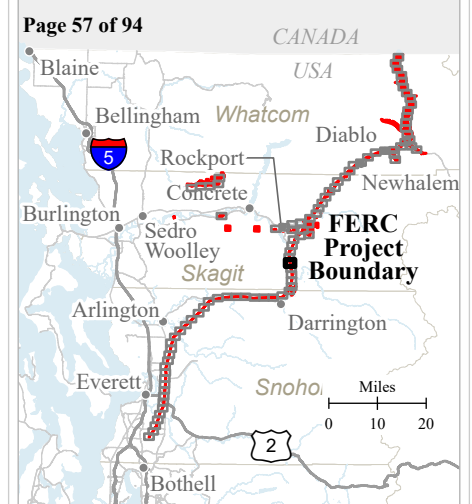
SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Invasive Point	Invasive Line	Invasive Polygon
 CEDI	 CYSC	 CYSC
 CEST		 RUBI

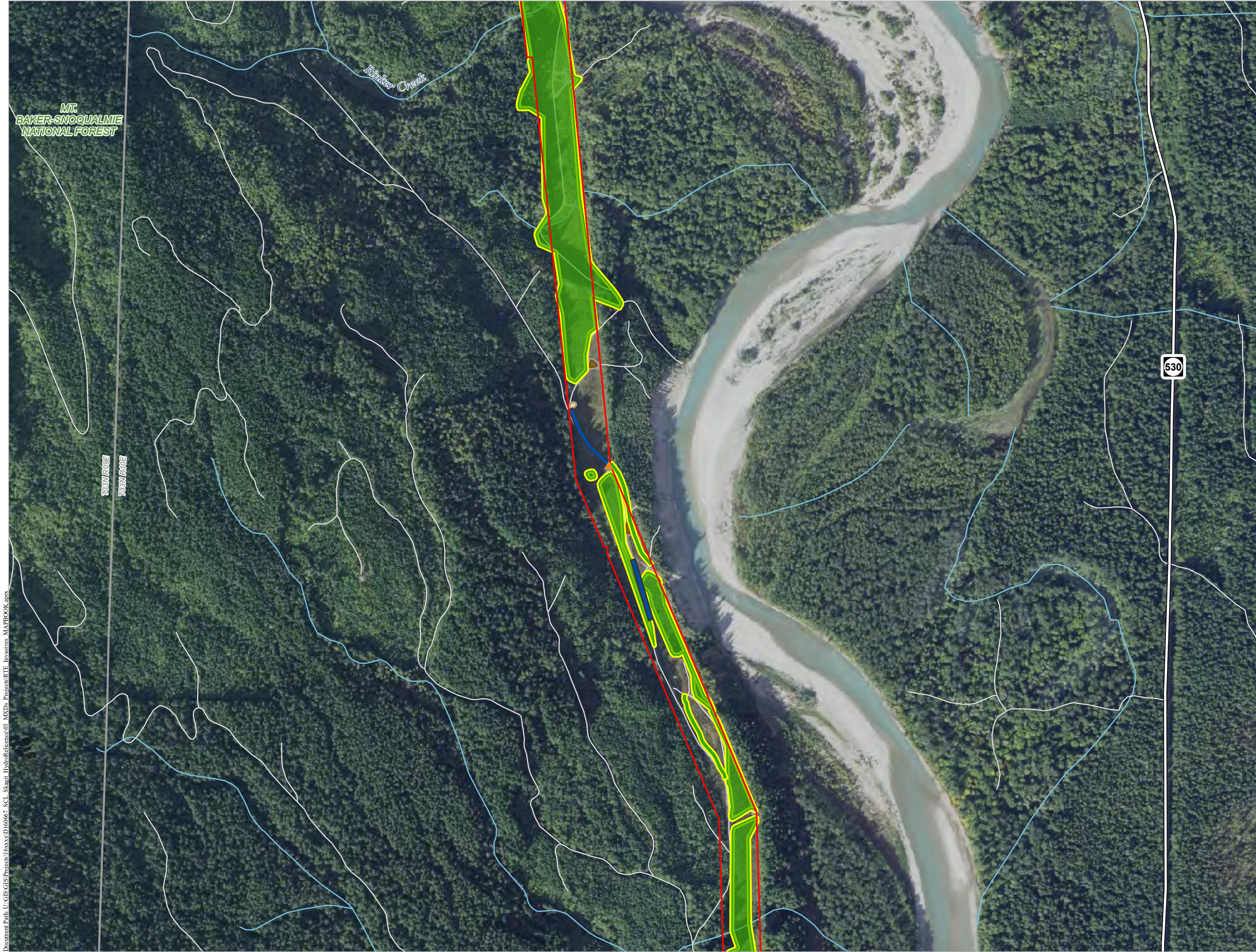


Page 57 of 94

 Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

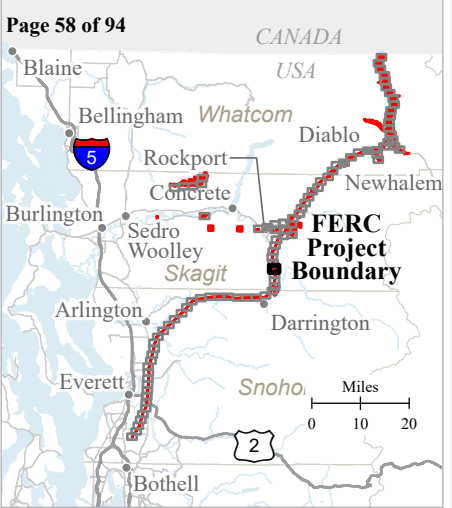
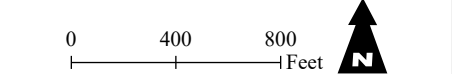
Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].



TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| ▲ PORE | CYSC | CYSC |
| | TAVU | PHAR |
| | | RUBI |

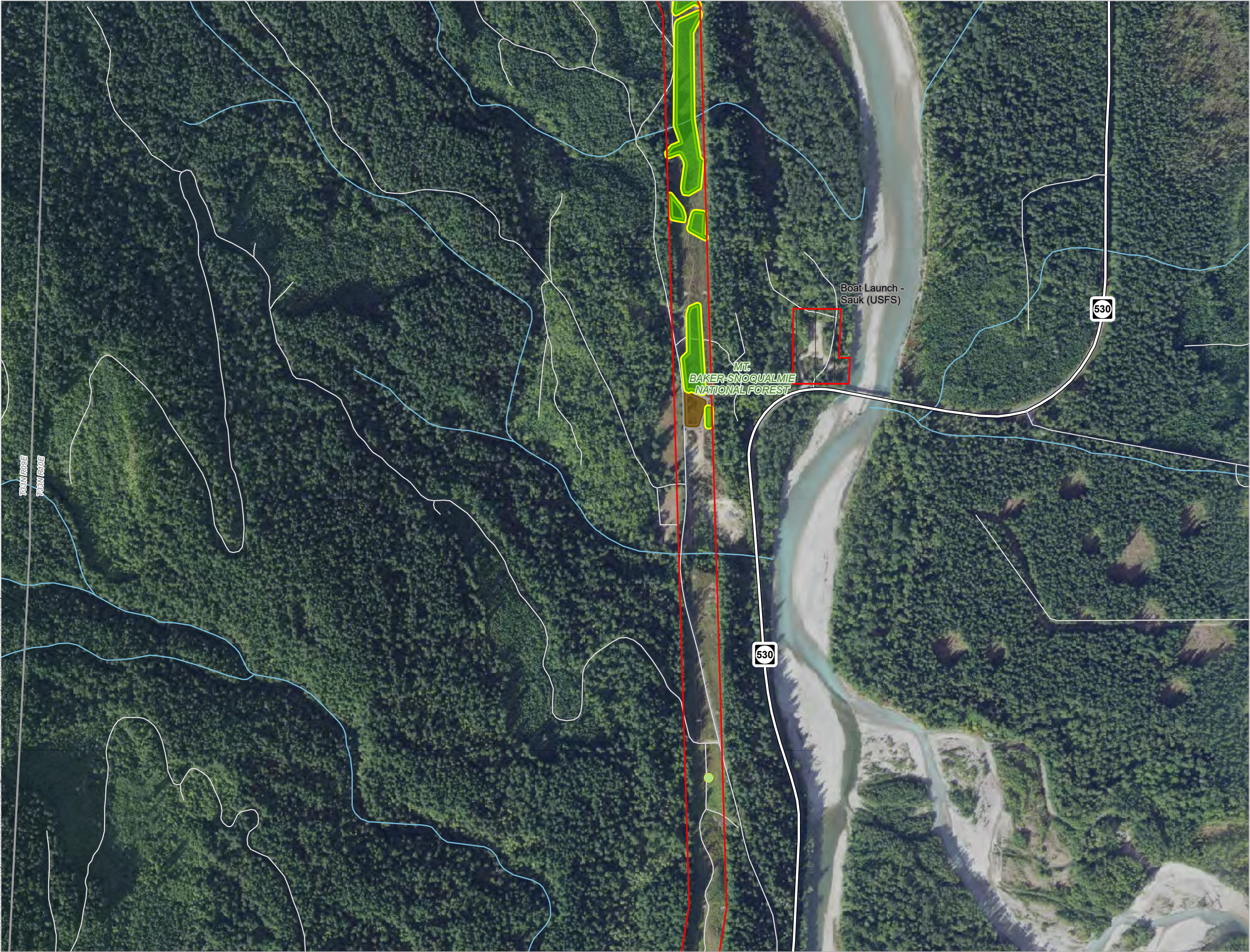


Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

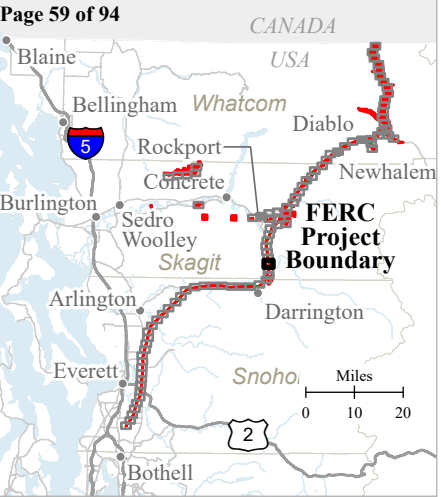
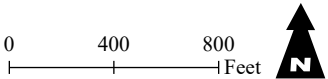
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | | |
|----------------|------------------|
| Invasive Point | Invasive Polygon |
| ● CRMO | ■ CYSC |
| | ■ RUBI |

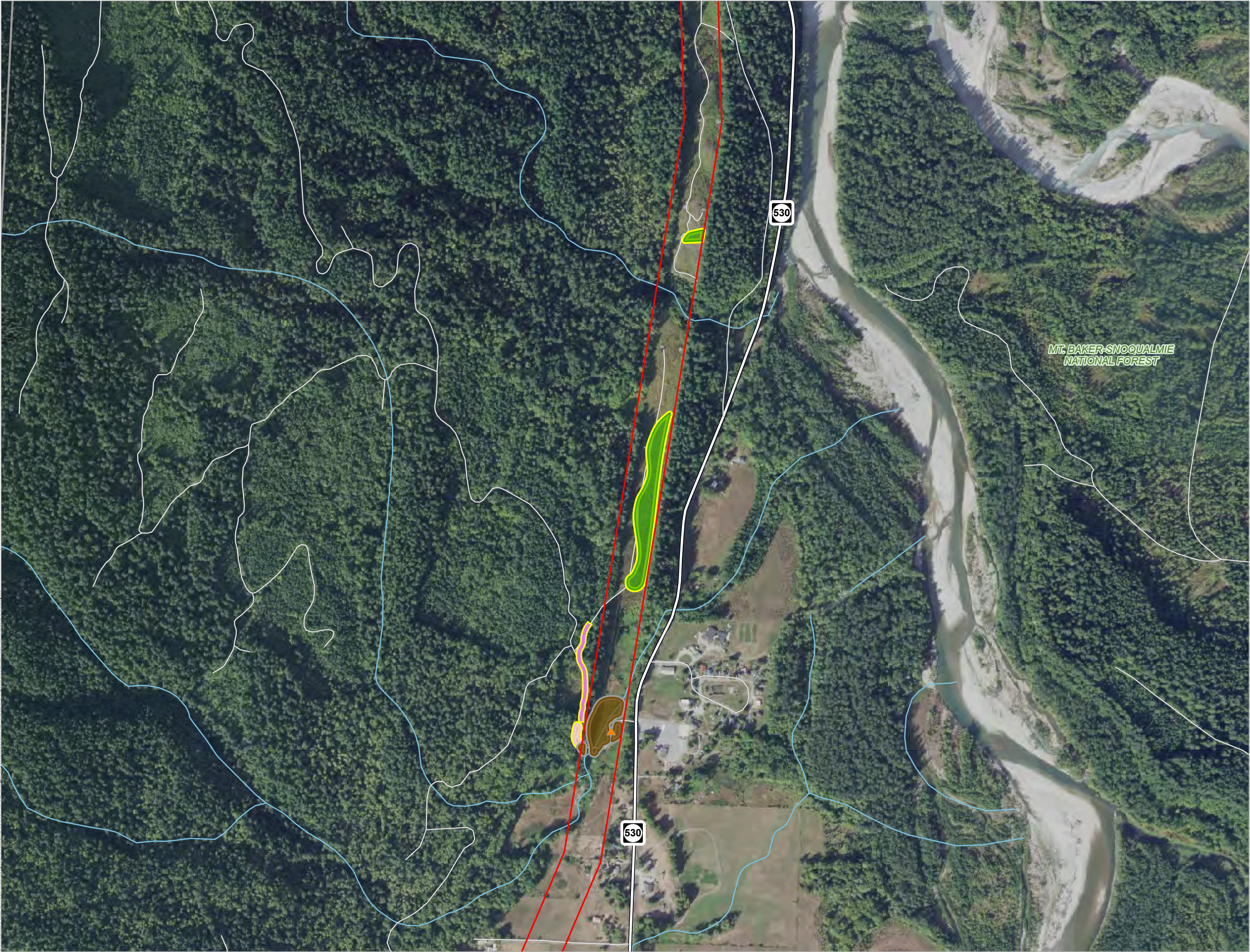


Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

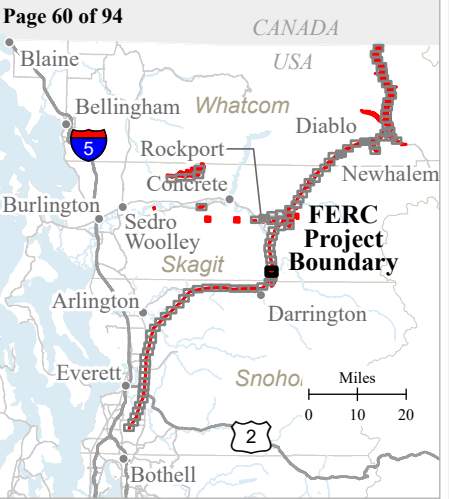
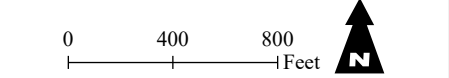
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

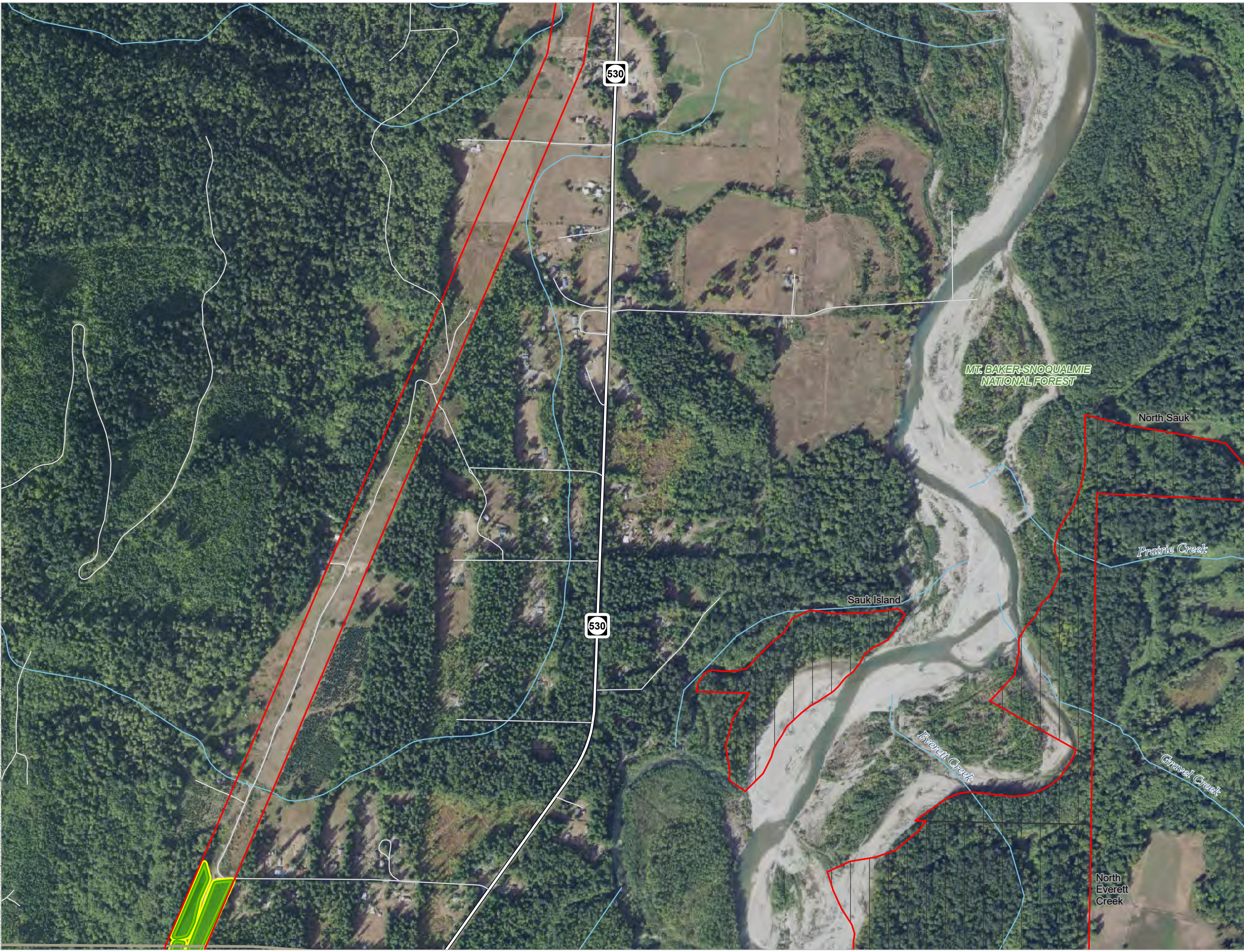
- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| PORE | GERO | CYSC |
| | | GERO |
| | | RUBI |



**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MapBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

FERC Project Boundary

Mitigation Parcel

Secondary Highway

Other Road

Streams

Invasive Polygon
CYSC

0400800
Feet

N

Page 61 of 94

Blaine Bellingham Rockport Concrete Sedro Woolley Skagit Burlington Arlington Darrington Everett Bothell Snoho

Whatcom Diablo Newhalem

USA CANADA

5 2

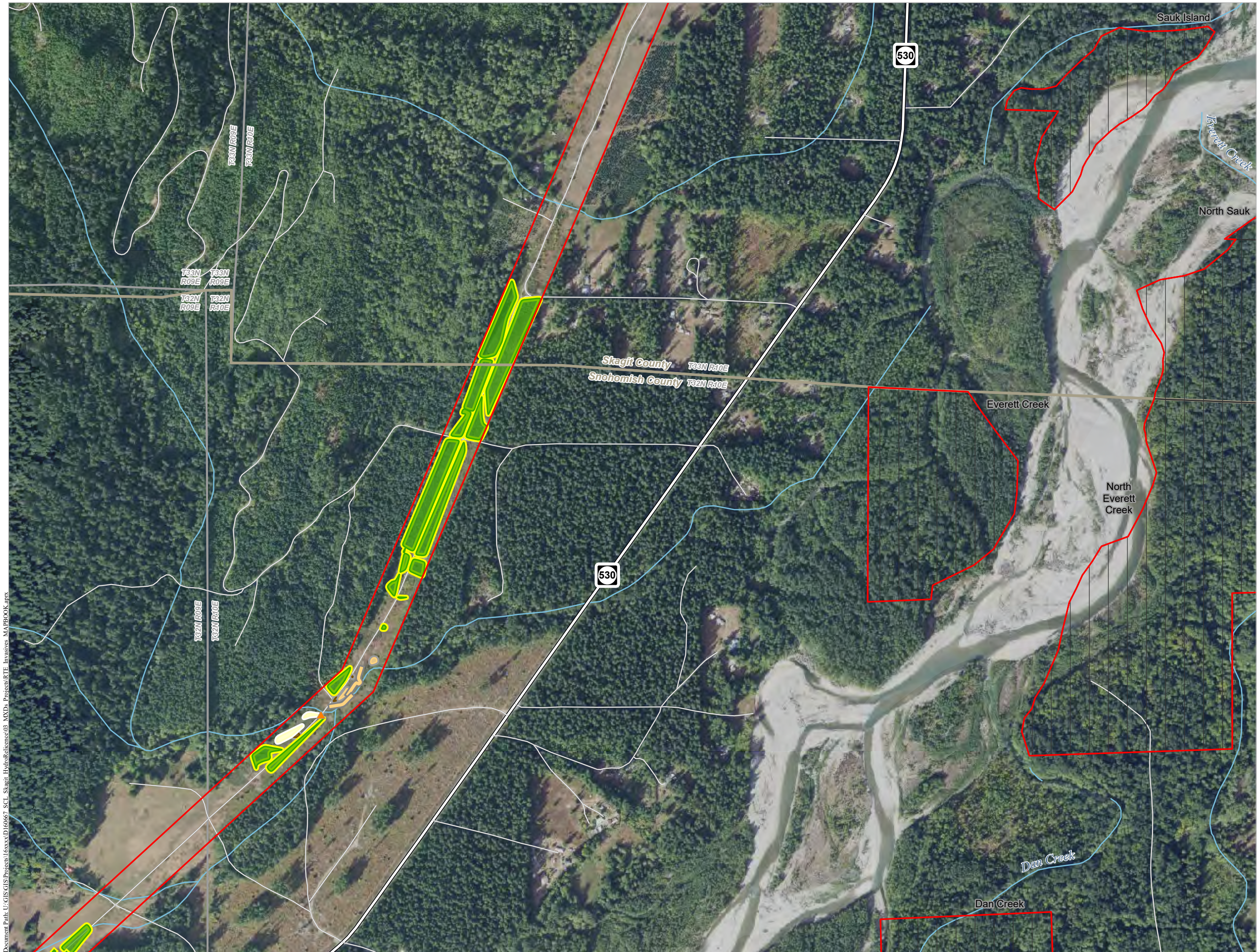
Miles 0 10 20

Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Document Path: U:\GIS\GIS\Projects\16xxxx\16xxxxD\60667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MapBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

FERC Project Boundary

Mitigation Parcel

Secondary Highway

Other Road

Streams

Invasive Point

▲ PORE

Invasive Line

CYSC

PHAR

Invasive Polygon

CIAR

CYSC

PHAR

RUBI

0400800

Feet

N

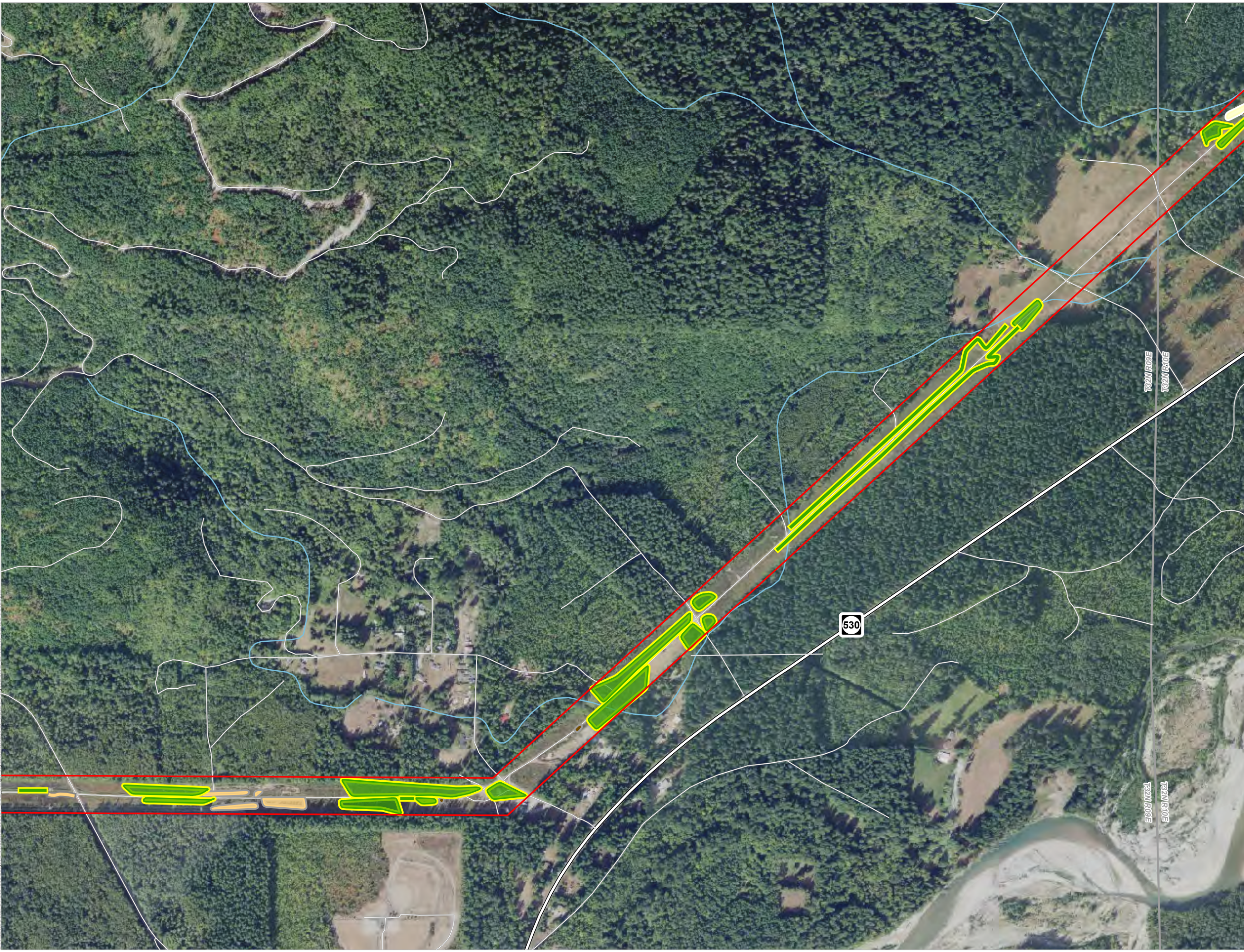
Page 62 of 94

Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light. City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data. Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit HydroReference\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

FERC Project Boundary

Secondary Highway

Other Road

Streams

Invasive Line

CYSC

PHAR

Invasive Polygon

CIAR

CYSC

PHAR

RUBI

0400800

Feet

N

Page 63 of 94

CANADA

USA

Blaine

Bellingham

Whatcom

Diablo

Rockport

Concrete

Newhalem

Burlington

Sedro

Woolley

Skagit

FERC Project Boundary

Arlington

Darrington

Everett

Bothell

Snoho

Miles

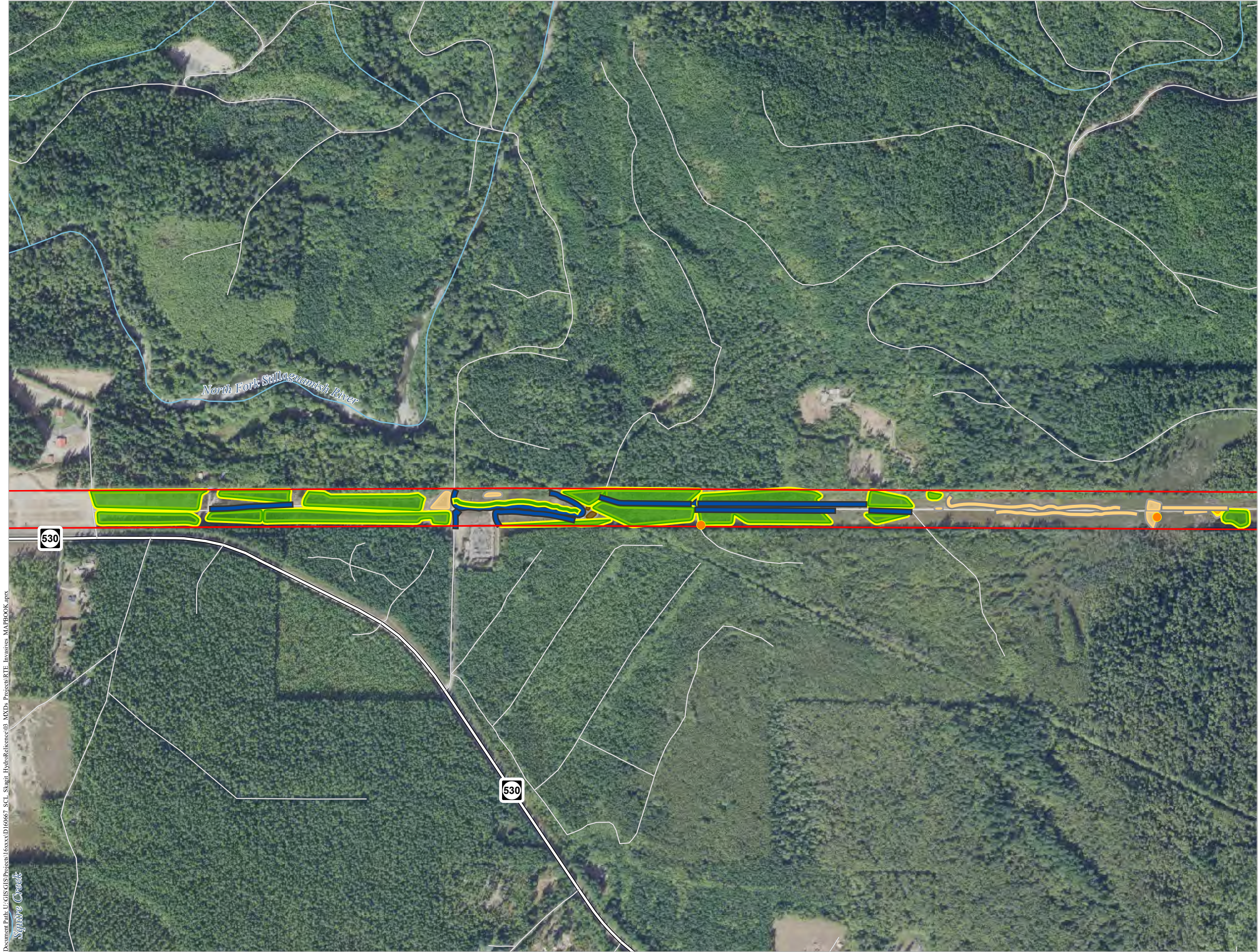
01020

2

Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

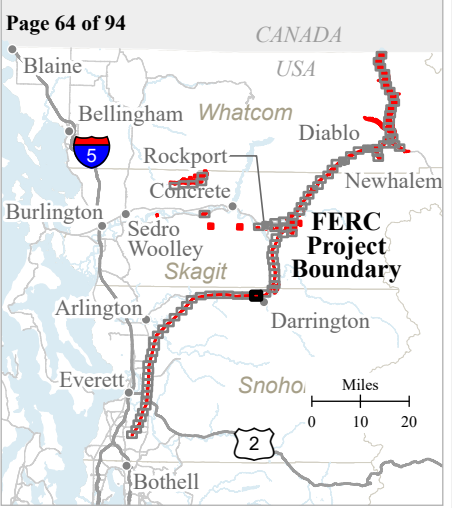
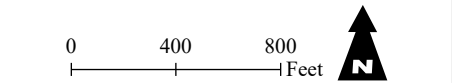
Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

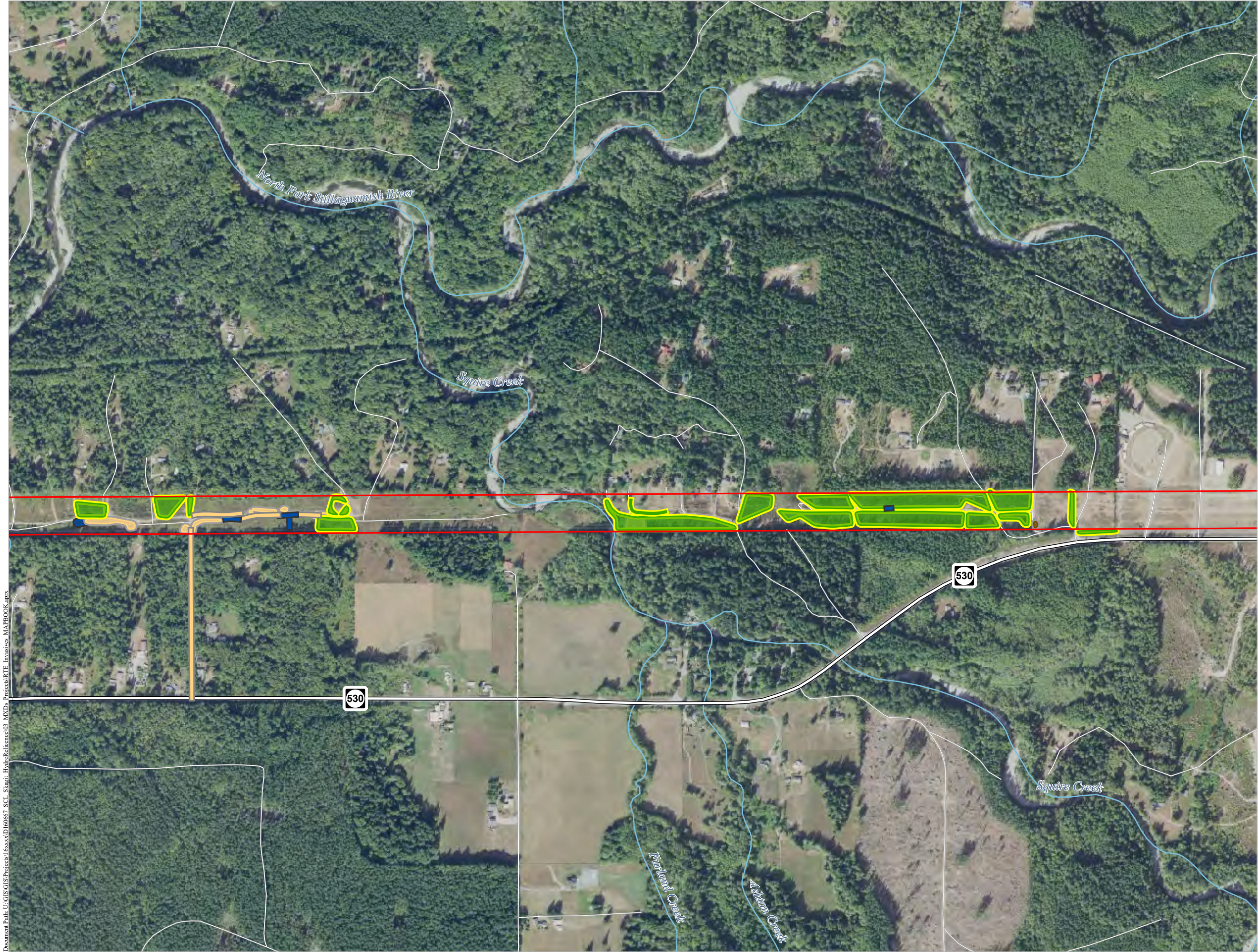
- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| FAJA | CYSC | CYSC |
| | PHAR | FAJA |
| | TAVU | PHAR |
| | | RUBI |
| | | TAVU |



SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

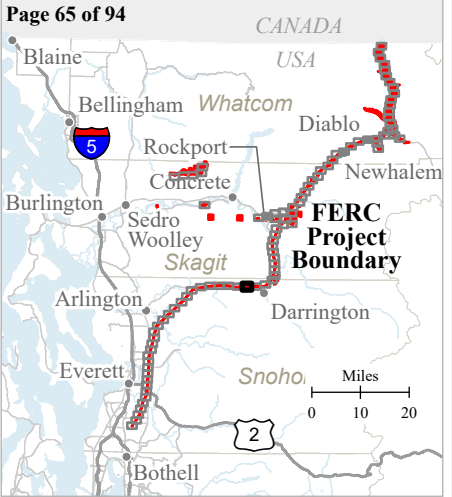
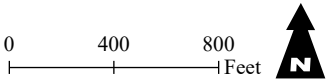
Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].



**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

Invasive Line		Invasive Polygon	
CYSC	PHAR	CYSC	PHAR
TAVU		RUBI	TAVU



Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

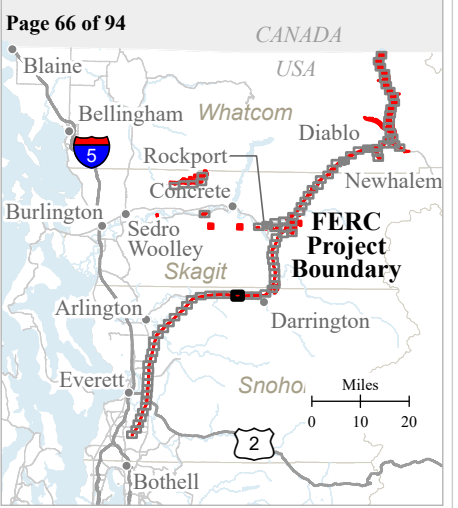
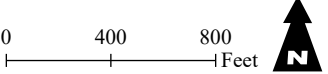
Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | Invasive Line | Invasive Polygon |
|---------------|------------------|
| CYSC | CIAR |
| TAVU | COAR |
| | CYSC |
| | FAJA |
| | PHAR |
| | RUBI |
| | TAVU |

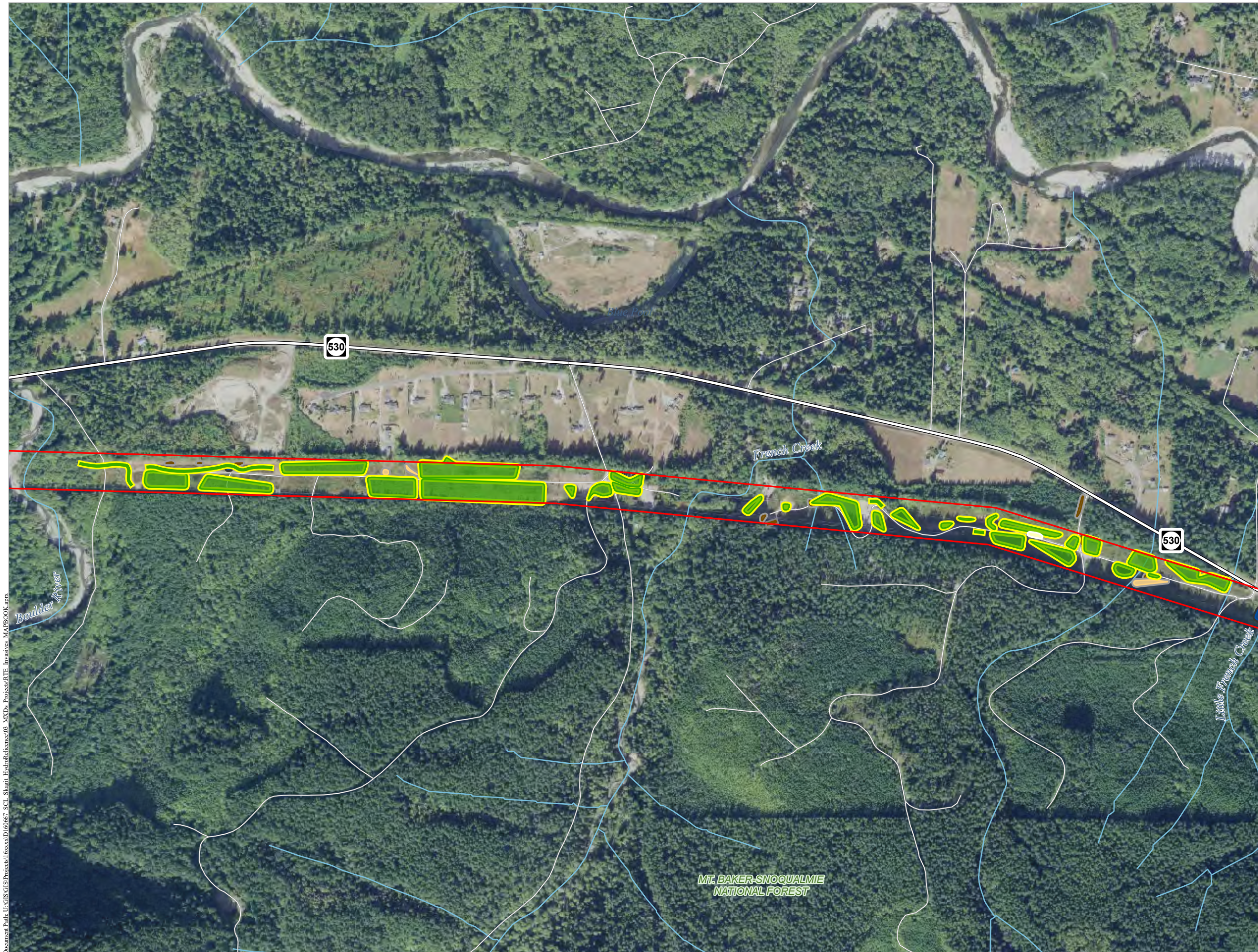


Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

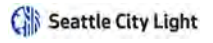
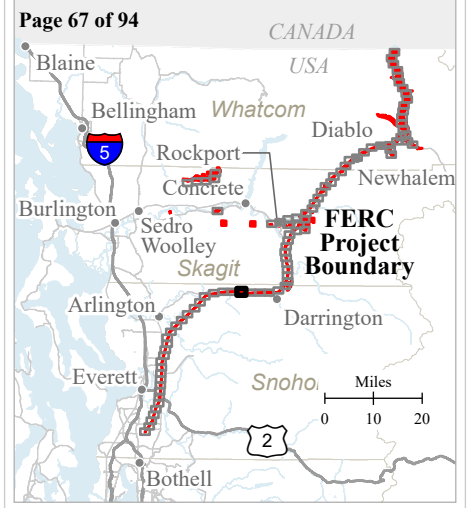
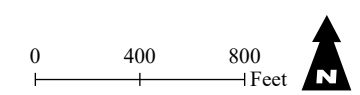
Document Path: U:\GIS\GIS\Projects\16xxxx\160667_SCL_Skagit_Hydro\References\03_MXDs\Projects\RTE_Invasives_MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | Invasive Line | Invasive Polygon |
|---------------|------------------|
| CYSC | CIAR |
| RUBI | CYSC |
| | PHAR |
| | RUBI |
| | TAVU |



SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

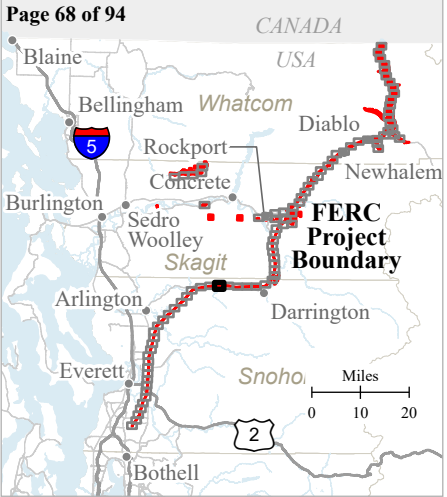
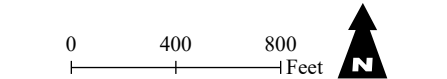
Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].



**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

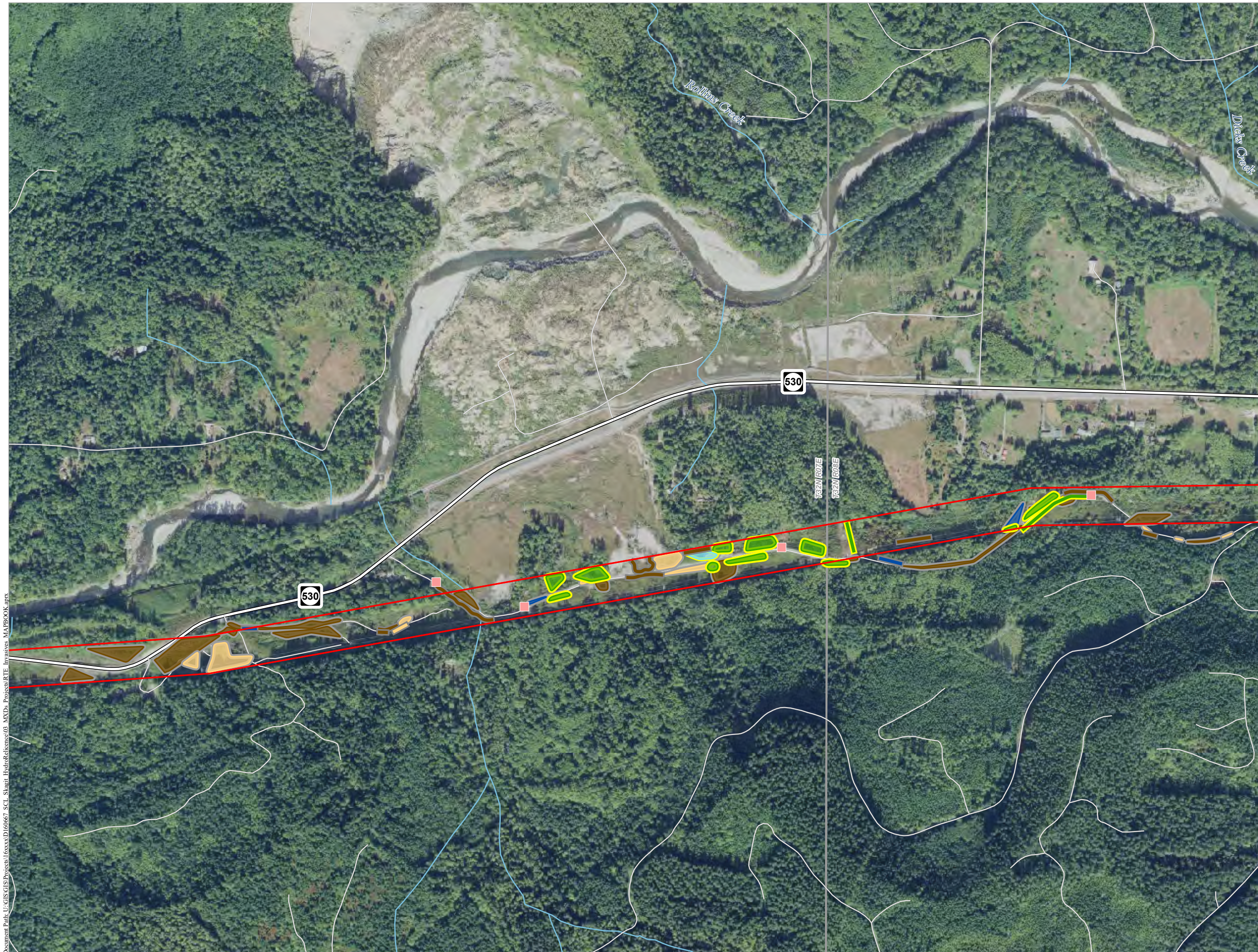
Invasive Point	Invasive Line	Invasive Polygon
BUDA	CYSC	CYSC
	GERO	GERO
	JAVU	RUBI
	PHAR	
	RUBI	
	TAVU	



**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

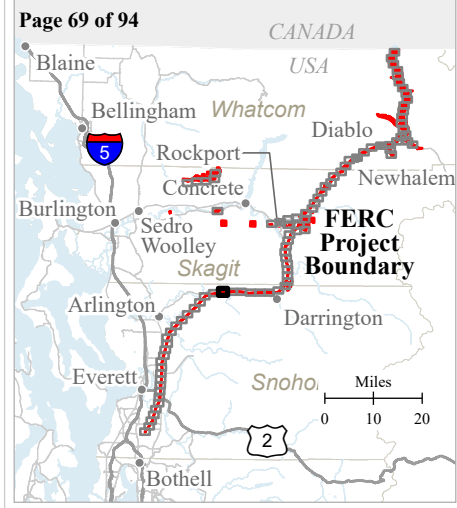
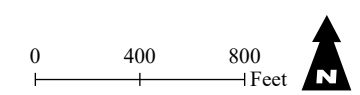
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs Projects\RTI Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

Invasive Point	Invasive Line	Invasive Polygon
BUDA	CYSC	COAR
	JAVU	CYSC
	PHAR	JAVU
	RUBI	PHAR
		RUBI



Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

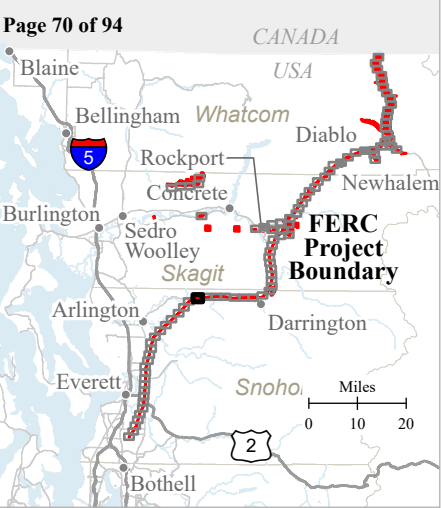
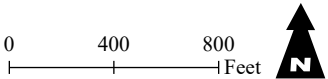
Document Path: U:\GIS\GIS\Projects\6xxxxD\60667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | | |
|---------------|------------------|
| Invasive Line | Invasive Polygon |
| RUBI | PHAR |
| | RUBI |

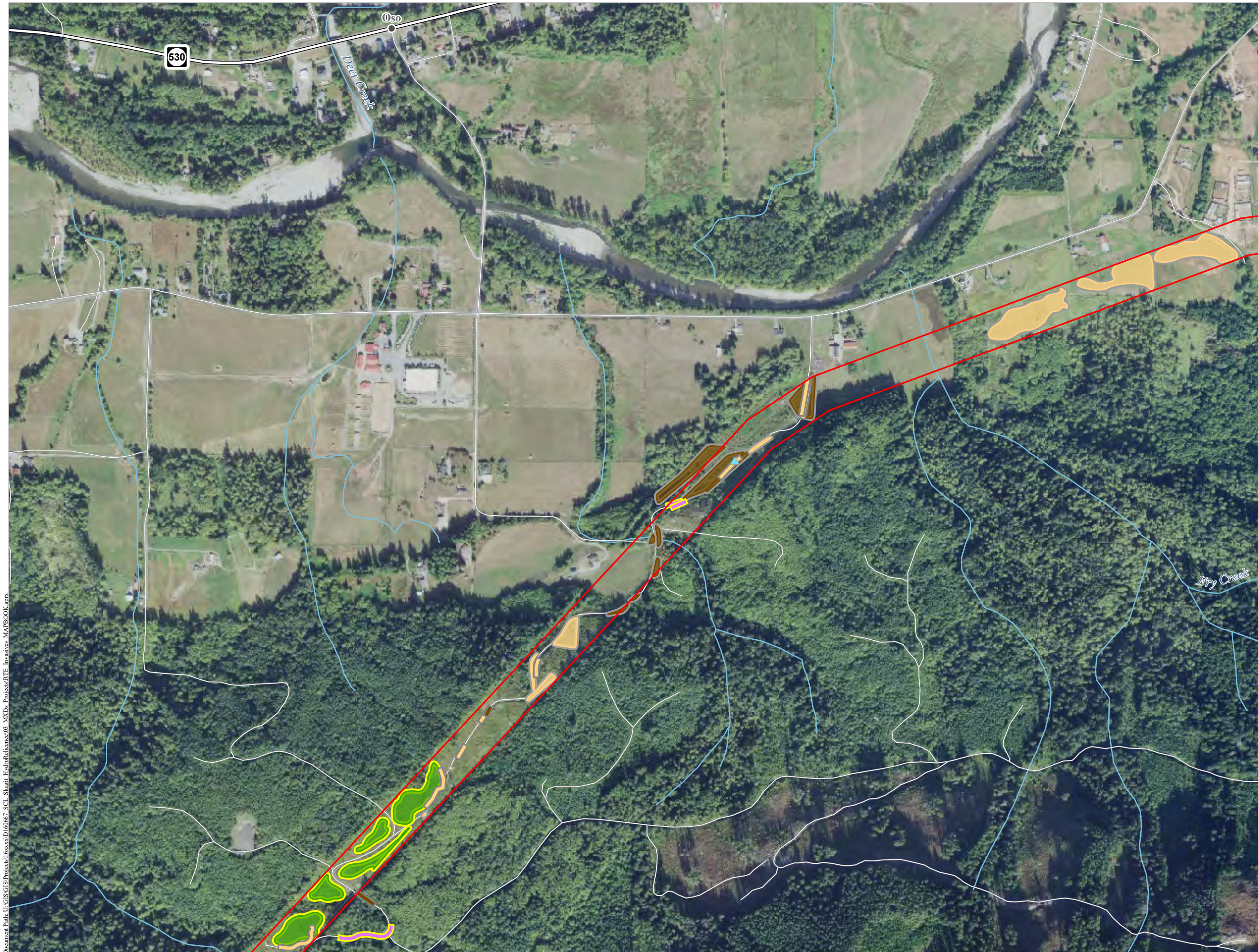


Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit HydroReference\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

FERC Project Boundary

Secondary Highway

Other Road

Streams

Invasive Point

ILAQ

Invasive Line

GERO

PHAR

RUBI

Invasive Polygon

CYSC

PHAR

RUBI

0400800

Feet

N

Page 71 of 94

CANADA

USA

Blaine

Bellingham

Whatcom

Diablo

Rockport

Concrete

Newhalem

Burlington

Sedro

Woolley

Skagit

FERC Project Boundary

Arlington

Darrington

Everett

Snoho

Bothell

2

Miles

01020

Seattle City Light

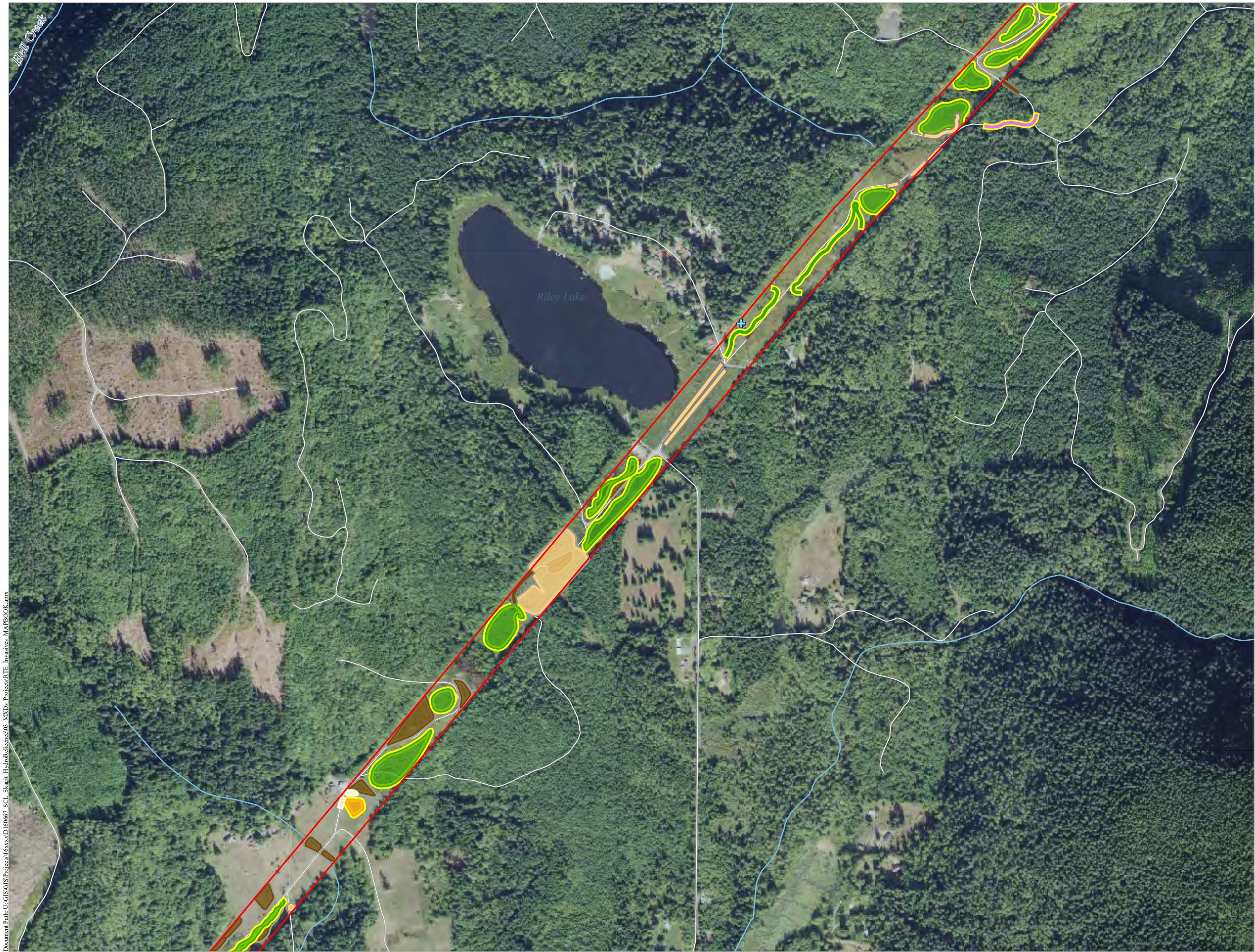
SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.

City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.

Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

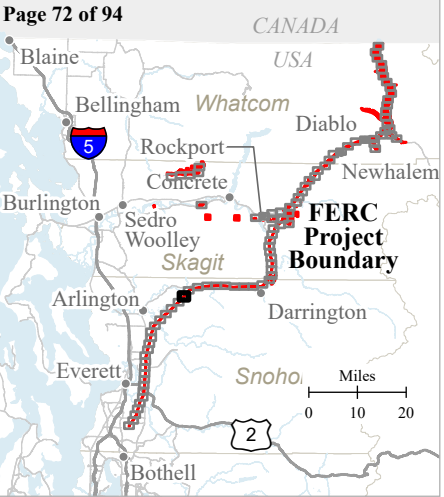
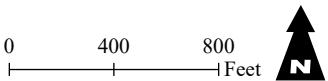
Document Path: U:\GIS\GIS\Projects\66667 SCL Skagit HydroReference\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK

- FERC Project Boundary
Other Road
Streams

Invasive Point	Invasive Line	Invasive Polygon
+ SOAU	CIAR	CIAR
	CYSC	CYSC
	GERO	FAJA
	PHAR	JAVU
	RUBI	PHAR
		RUBI

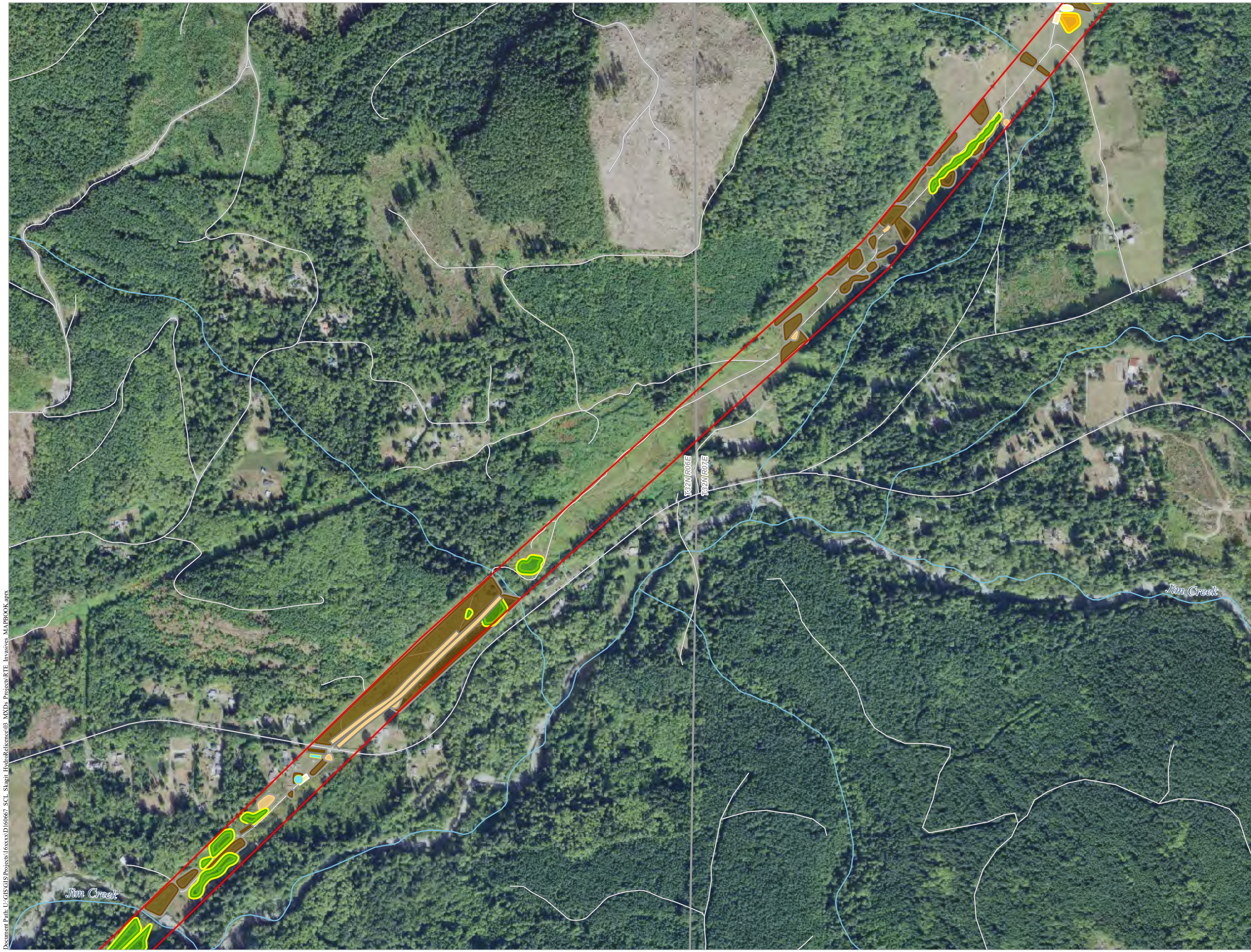


Seattle City Light

SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE_invasives_MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

FERC Project Boundary

Other Road

Streams

Invasive Point

COAR

Invasive Line

CIAR

COAR

PHAR

RUBI

Invasive Polygon

CIAR

CYSC

FAJA

PHAR

RUBI

0400800

Feet

N

Page 73 of 94

CANADA

USA

Blaine

Bellingham

Whatcom

Diablo

Rockport

Concrete

Newhalem

Burlington

Sedro

Woolley

Skagit

Arlington

Darrington

Everett

Snoho

Bothell

2

01020

Miles

Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Document Path: U:\GIS\GIS\Projects\6xxxx\60667 SCL Skagit HydroReference\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

FERC Project Boundary

Other Road

Streams

Invasive Point

ILAQ

Invasive Line

COAR

CYSC

PHAR

RUBI

Invasive Polygon

CYSC

PHAR

RUBI

0400800

Feet

N

Page 74 of 94

CANADA

USA

Blaine

Bellingham

Whatcom

Diablo

Rockport

Concrete

Newhalem

Burlington

Sedro

Woolley

Skagit

FERC Project Boundary

Arlington

Darrington

Everett

Snoho

Bothell

2

Miles

01020

Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light. City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data. Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

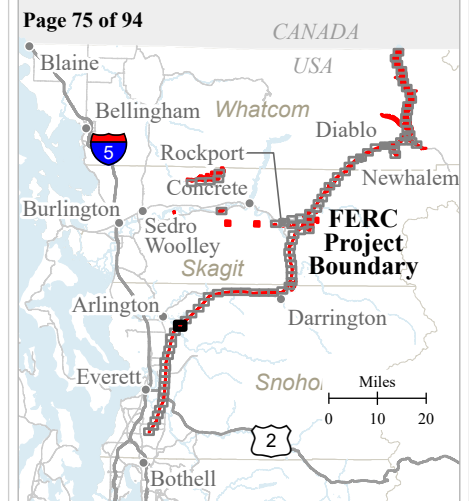
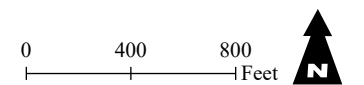
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Other Road
- Streams

- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| ILAQ | CIAR | CEDI |
| | PHAR | CYSC |
| | RUBI | FAJA |
| | | PHAR |
| | | RUBI |
| | | TAVU |



Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit HydroReference\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

FERC Project Boundary

Other Road

Streams

Invasive Point

ILAQ

Invasive Line

CIAR

COAR

CYSC

GERO

PHAR

RUBI

Invasive Polygon

CYSC

PHAR

RUBI

TAVU

0400800

Feet

N

Page 76 of 94

CANADA

USA

Blaine

Bellingham

Whatcom

Diablo

Rockport

Concrete

Newhalem

Burlington

Sedro

Woolley

Skagit

FERC Project Boundary

Arlington

Darrington

Everett

Snoho

Bothell

2

Miles

01020

Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.

City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.

Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

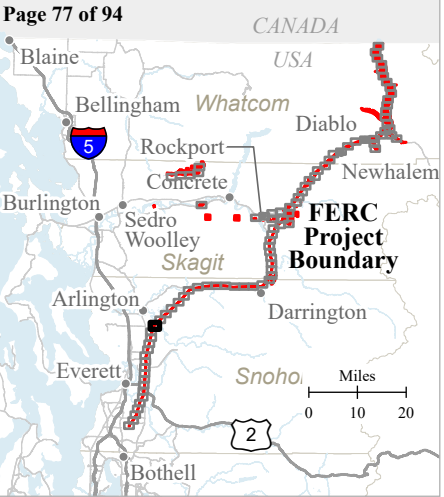
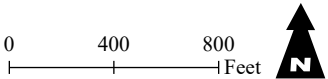
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK

- FERC Project Boundary
- Other Road
- Streams

Invasive Line	Invasive Polygon
CIAR	CEDI
CYSC	CYSC
PHAR	FAJA
RUBI	JAVU
	PHAR
	RUBI



Seattle City Light

SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

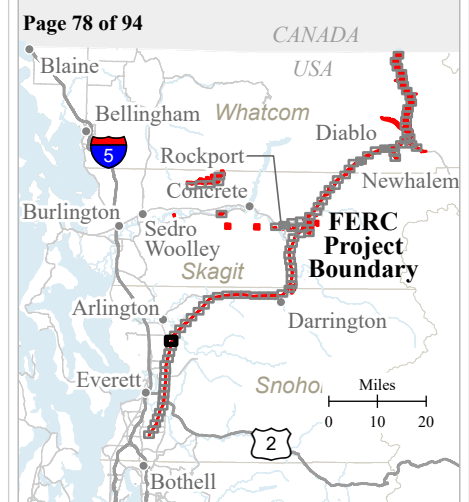
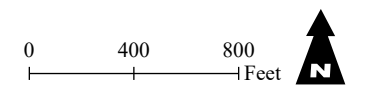
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Other Road
- Streams

Invasive Point	Invasive Line	Invasive Polygon
+ SOAU	CYSC	CIAR
	PHAR	CYSC
	RUBI	FAJA
		PHAR
		RUBI

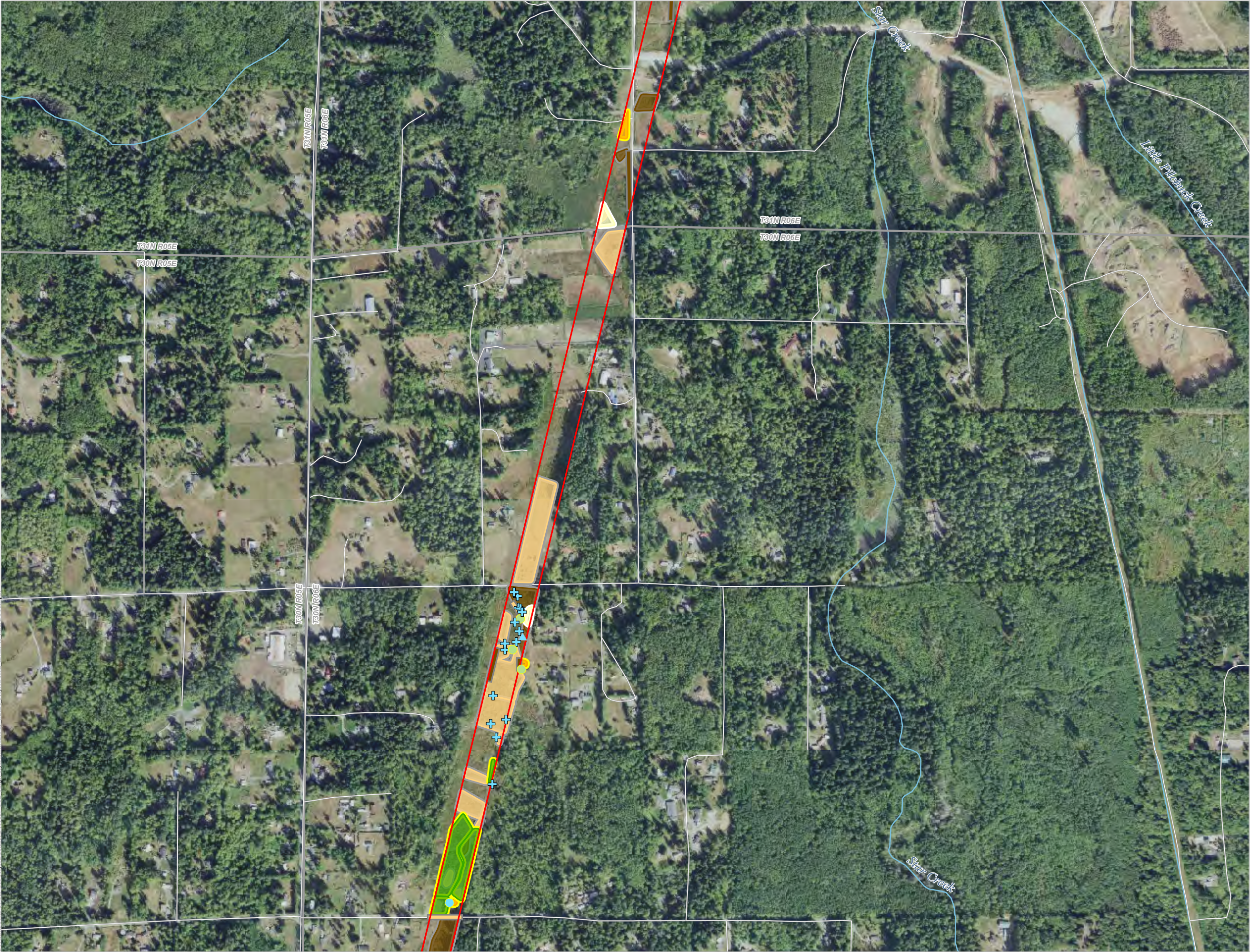


Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

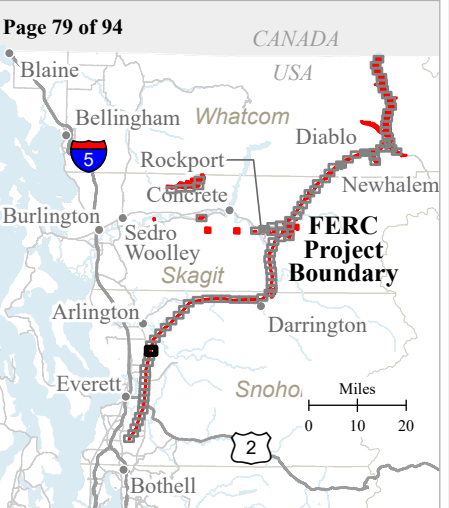
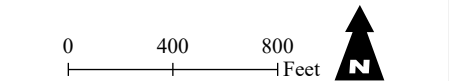
Document Path: U:\GIS\GIS\Projects\6xxxxD\60667 SCL Skagit HydroReference\03 MXDs Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Other Road
- Streams

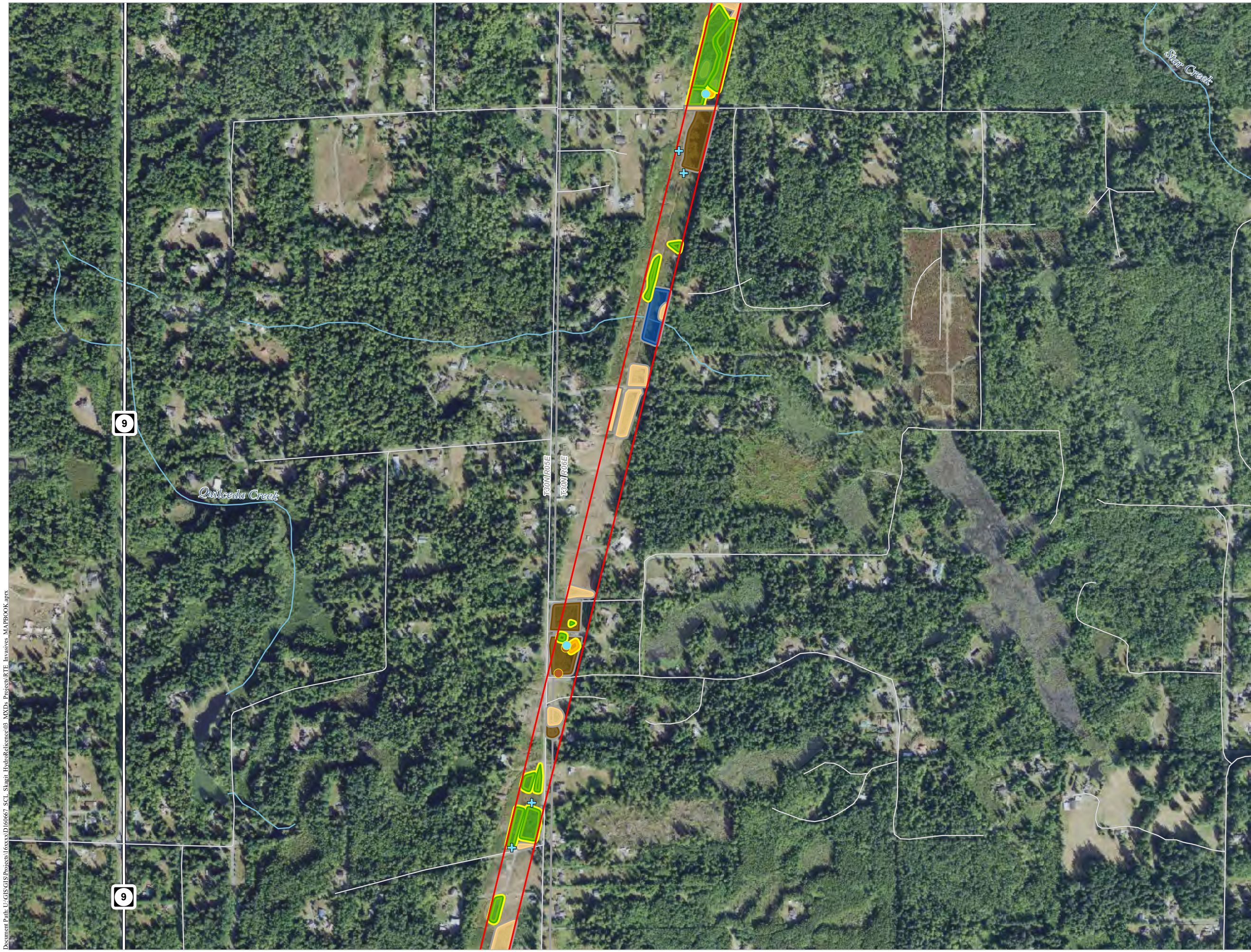
- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| COAR | PHAR | CIAR |
| CRMO | RUBI | CYSC |
| ILAQ | | FAJA |
| SOAU | | PHAR |
| | | RUBI |



SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

FERC Project Boundary

Secondary Highway

Other Road

Streams

Invasive Point

COAR

HIPI

SOAU

Invasive Line

PHAR

Invasive Polygon

CYSC

FAJA

JAVU

PHAR

RUBI

0400800

Feet

N

Page 80 of 94

CANADA

USA

Blaine

Bellingham

Whatcom

Diablo

Rockport

Concrete

Newhalem

Burlington

Sedro

Woolley

Skagit

FERC Project Boundary

Arlington

Darrington

Everett

Snoho

Bothell

Miles

01020

Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.

City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.

Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

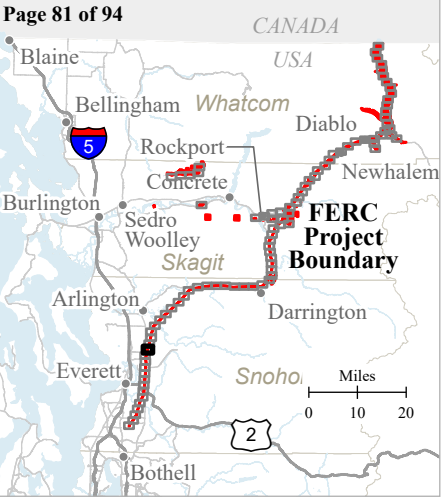
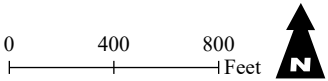
Document Path: U:\GIS\GIS\Projects\16xxxxD\60667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| ILAQ | PHAR | CIAR |
| SOAU | RUBI | COAR |
| | | CYSC |
| | | JAVU |
| | | PHAR |
| | | RUBI |
| | | TAVU |

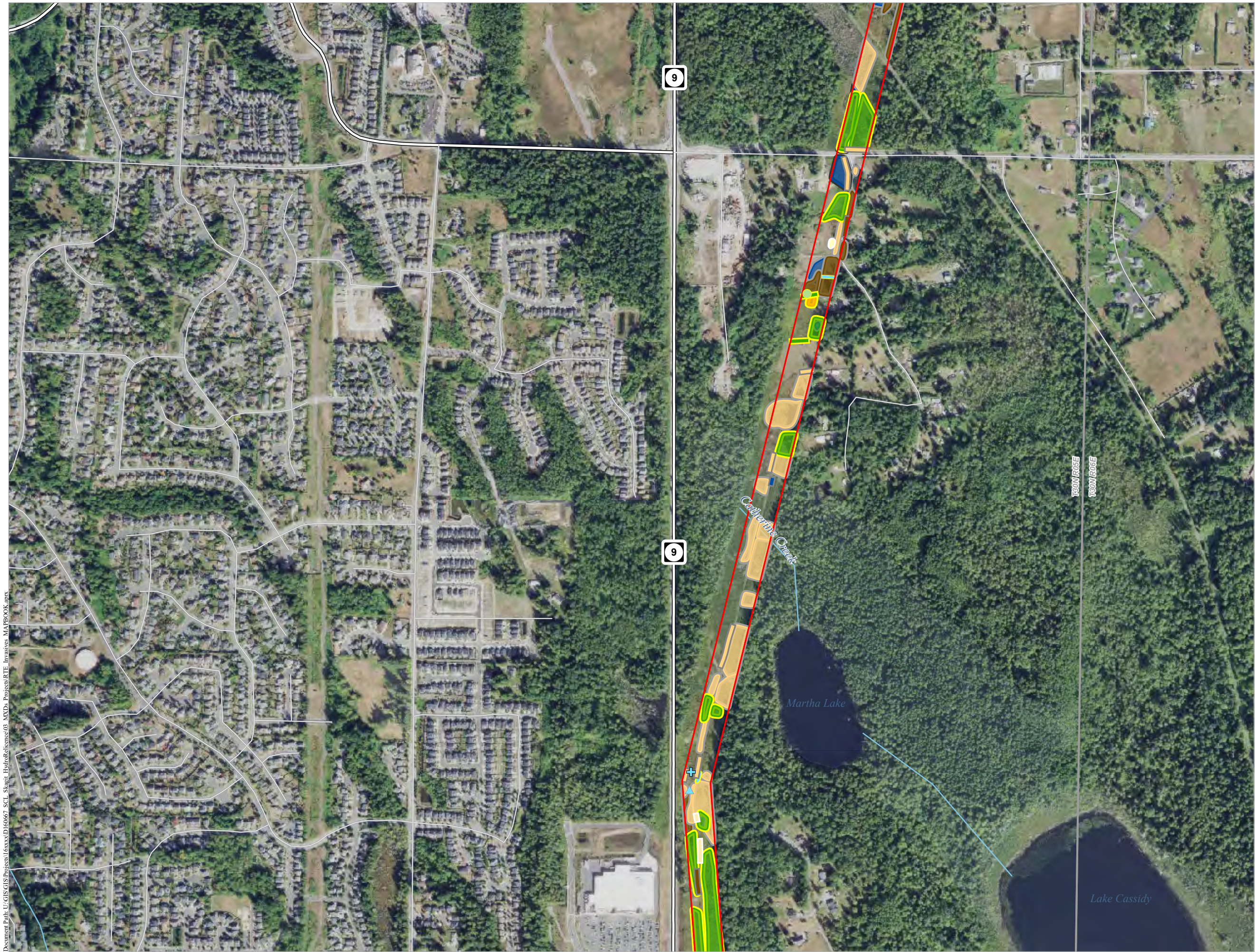


Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

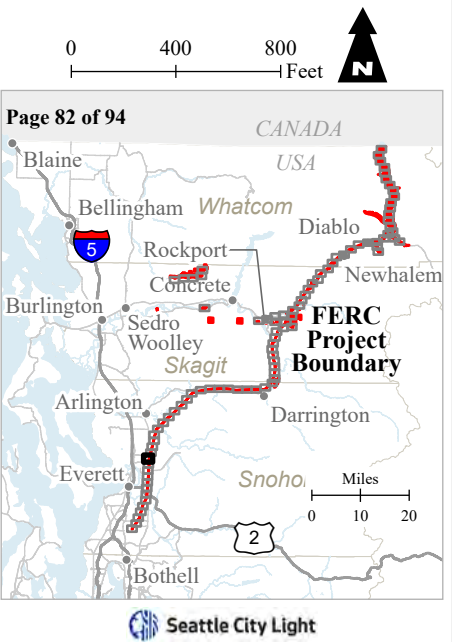
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit HydroReference\03 MXDs Projects\RTE_invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

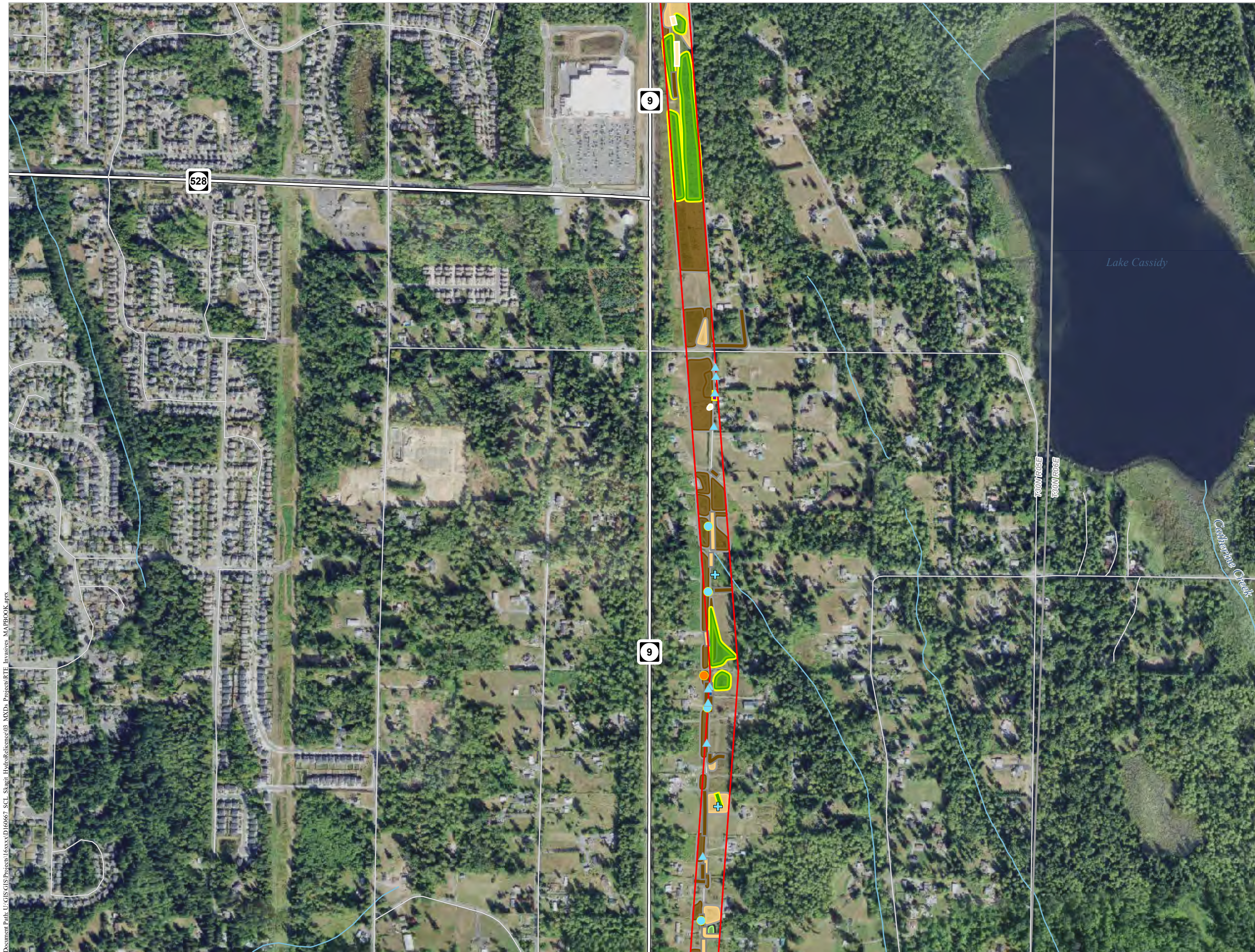
Invasive Point	Invasive Line	Invasive Polygon
● CRMO	— CIAR	■ CIAR
▲ ILAQ	— COAR	■ COAR
✚ SOAU	— CYSC	■ CYSC
	— JAVU	■ FAJA
	— PHAR	■ JAVU
	— RUBI	■ PHAR
		■ RUBI
		■ TAVU



SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

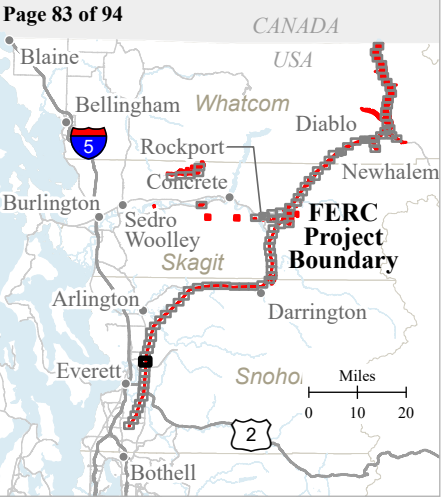
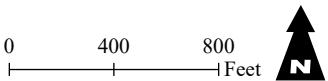
Document Path: U:\GIS\GIS\Projects\16xxxxD\60667 SCL Skagit Hydro\Reference\03 MXDs Projects\RTE Invasives MAPBOOK.aprx



**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

Invasive Point	Invasive Line	Invasive Polygon
COAR	CIAR	CIAR
FAJA	CYSC	CYSC
ILAQ	HEHE	PHAR
SOAU	JAVU	RUBI
	PHAR	VETH
	RUBI	



Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

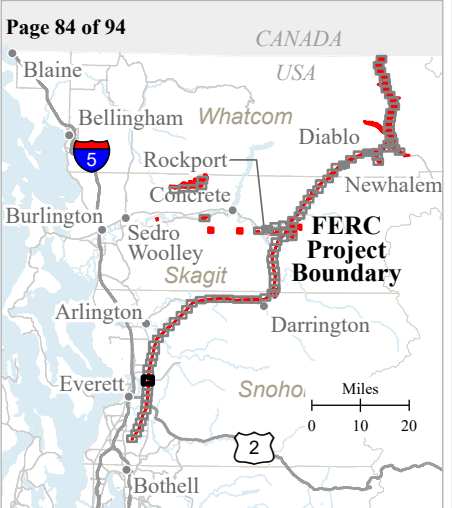
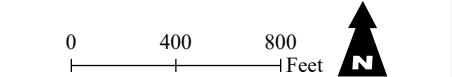
Document Path: U:\GIS\GIS\Projects\6xxxxD\60667 SCL Skagit HydroReference\03 MXDs\Projects\RTE_invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

Invasive Point	Invasive Line	Invasive Polygon
COAR	CIAR	CIAR
CRMO	CYSC	CYSC
ILAQ	PHAR	PHAR
PRCE	RUBI	RUBI
		TAVU
		VETH

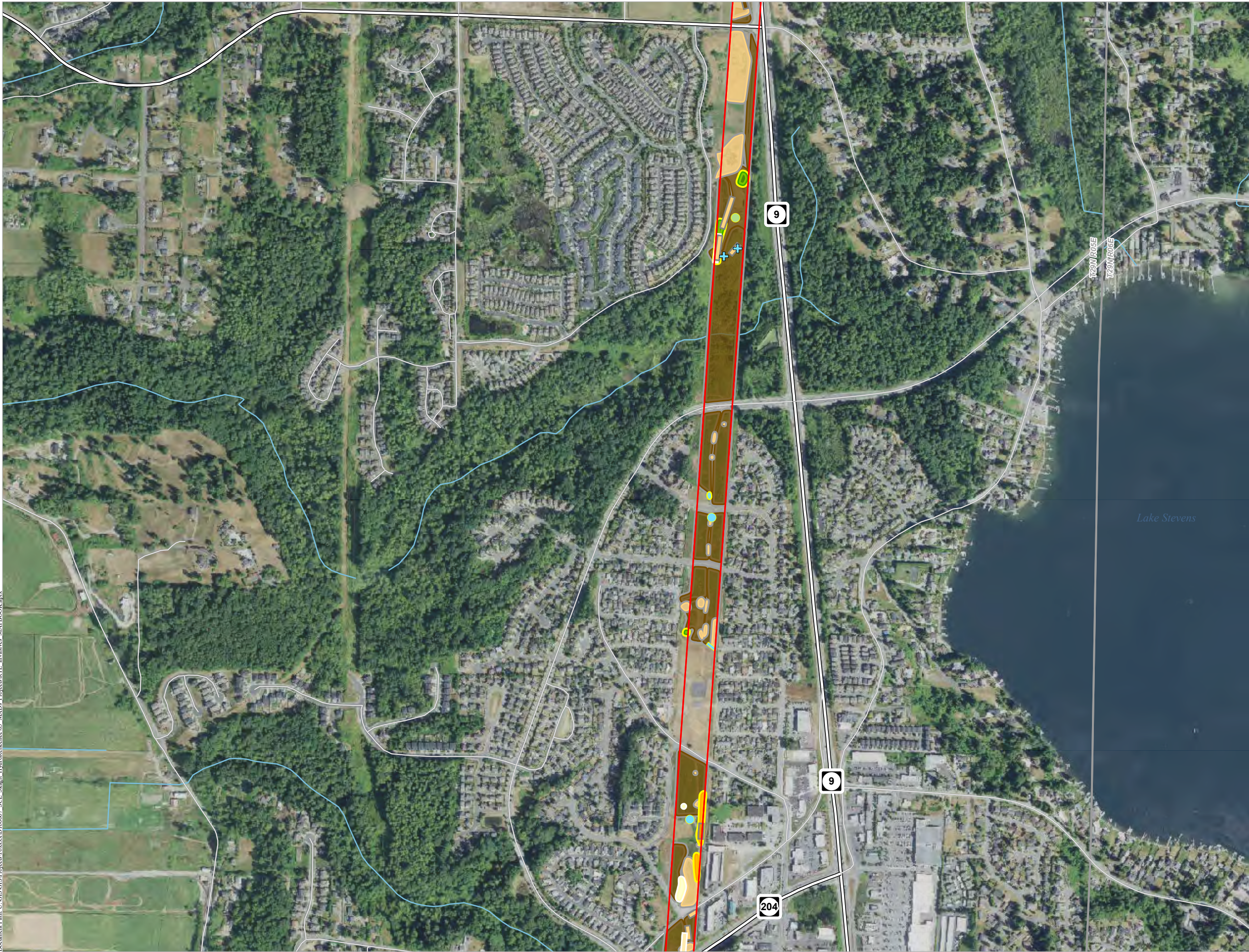


Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

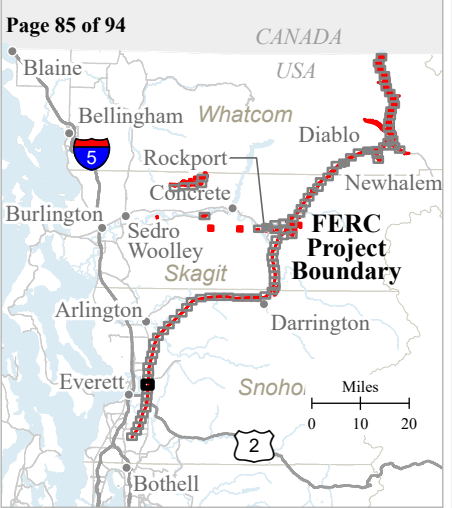
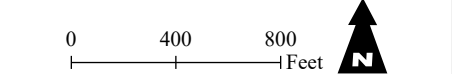
Document Path: U:\GIS\GIS\Projects\16xxxx\16xxxxD\60667_SCL_Skagit_Hydro\References\03_MXD\Projects\RTE_Invasives_MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

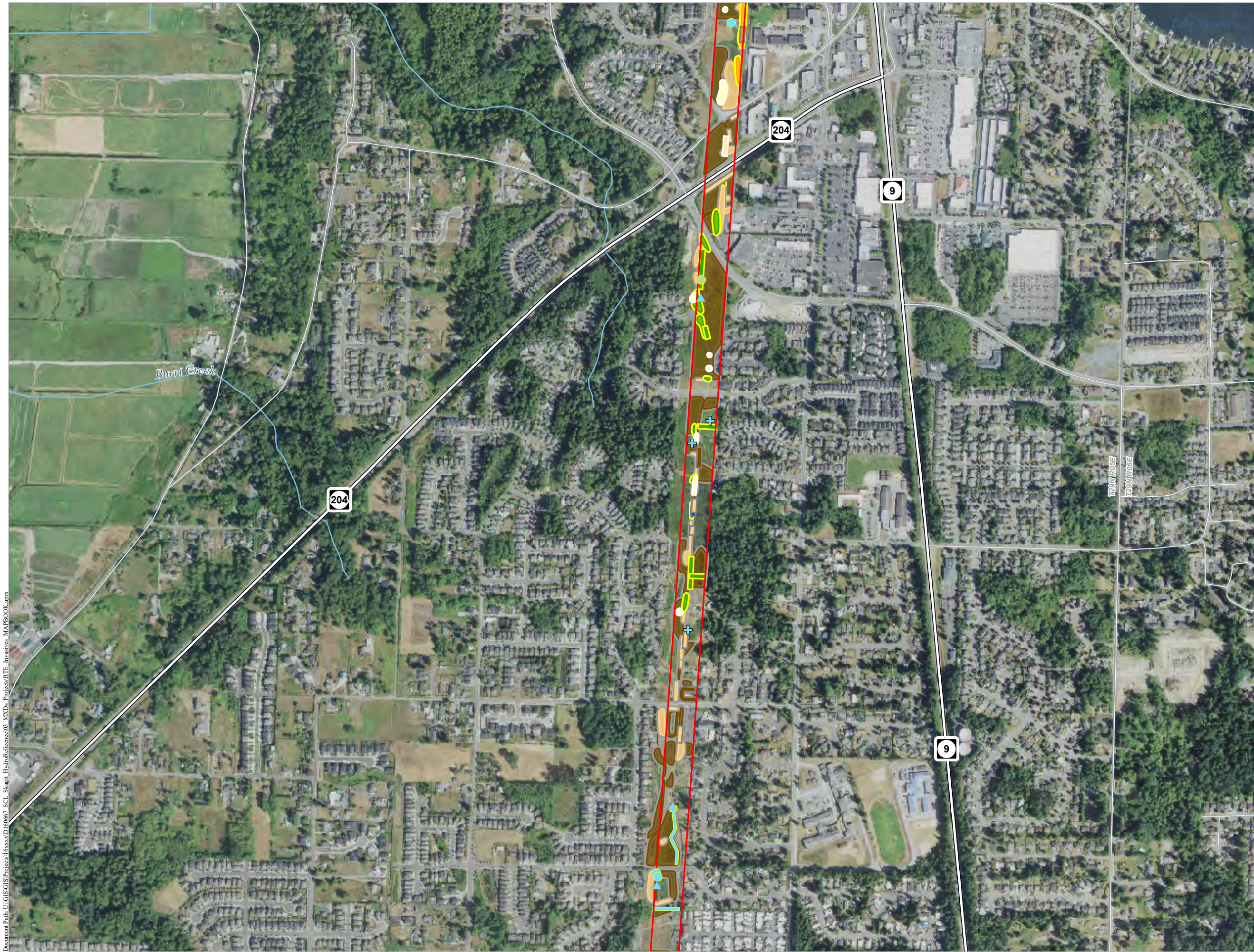
Invasive Point	Invasive Line	Invasive Polygon
COAR	CIAR	CIAR
CRMO	COAR	COAR
SOAU	PHAR	CYSC
	PORE	FAJA
	RUBI	JAVU
		PHAR
		RUBI



SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

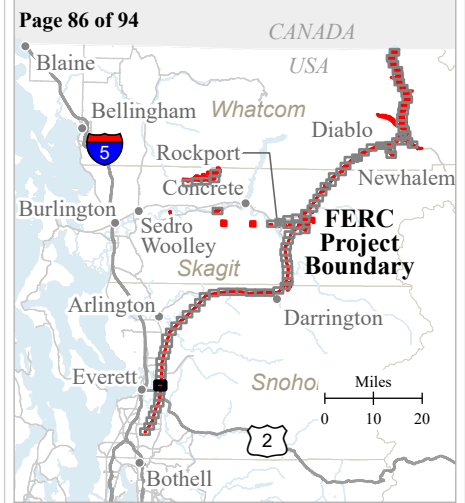
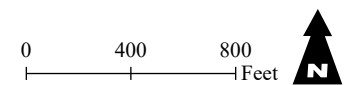
Document Path: U:\GIS\GIS\Projects\16xxxx\16xxxxD\60667_SCL_Skagit_Hydro\References\03_MXDs\Projects\RTI_Invasives_MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

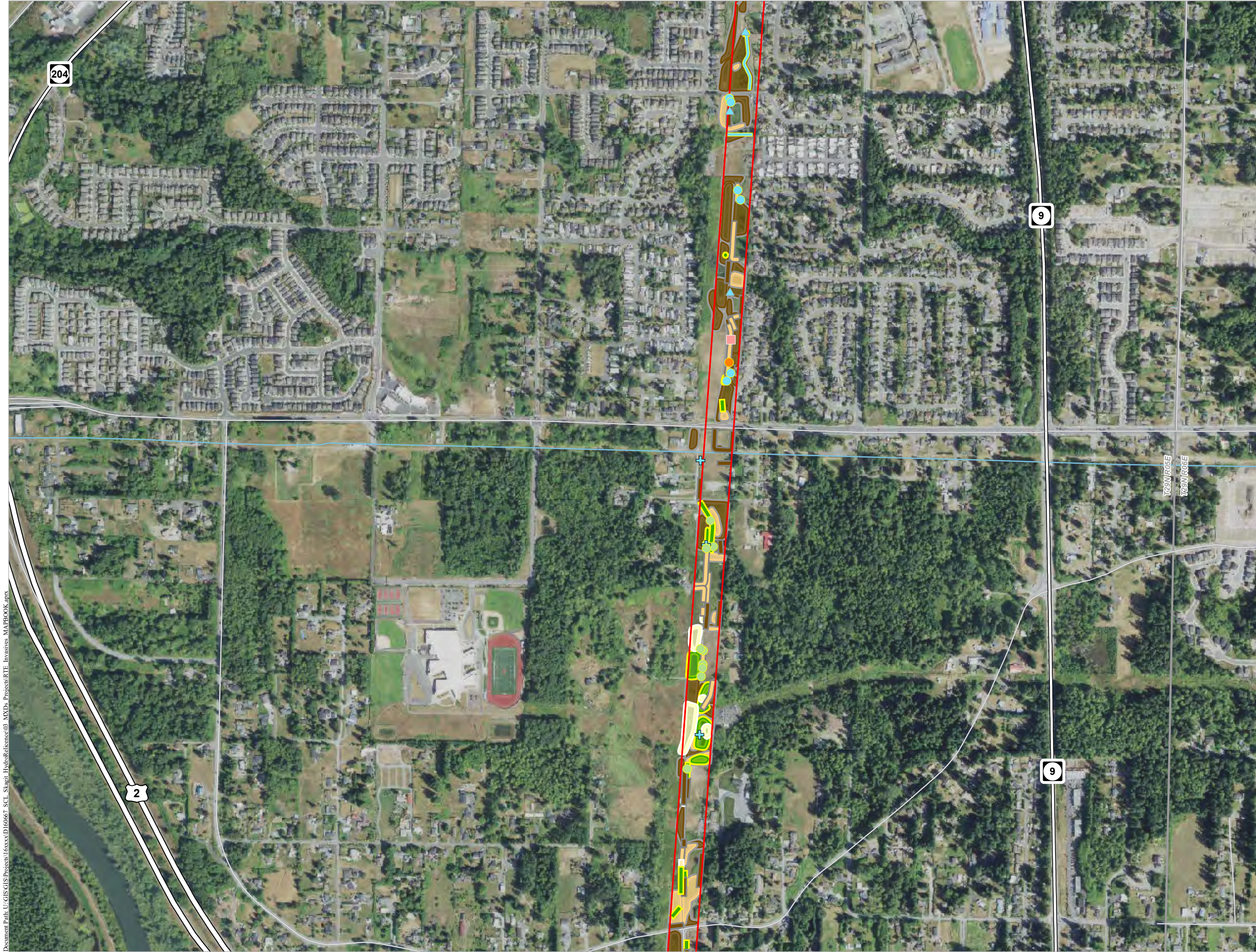
Invasive Point	Invasive Line	Invasive Polygon
COAR	CIAR	CIAR
CRMO	COAR	COAR
ILAQ	CYSC	CYSC
SOAU	JAVU	FAJA
	PHAR	JAVU
	PORE	PHAR
	RUBI	RUBI
		SOAU
		TAVU



Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

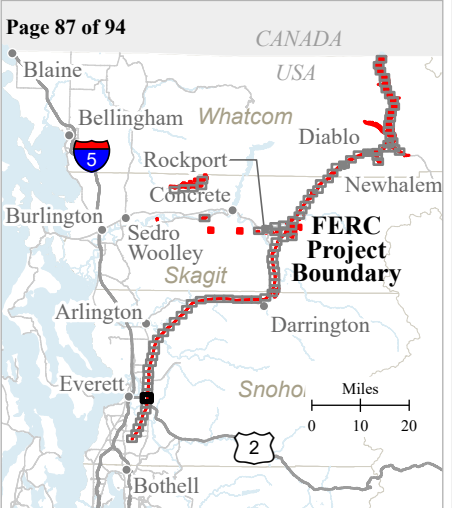
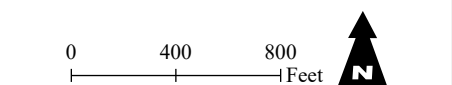
Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Primary Highway
- Secondary Highway
- Other Road
- Streams

Invasive Point	Invasive Line	Invasive Polygon
BUDA	CIAR	CIAR
COAR	COAR	COAR
CRMO	CYSC	CYSC
FAJA	PHAR	FAJA
ILAQ	RUBI	PHAR
SOAU		RUBI

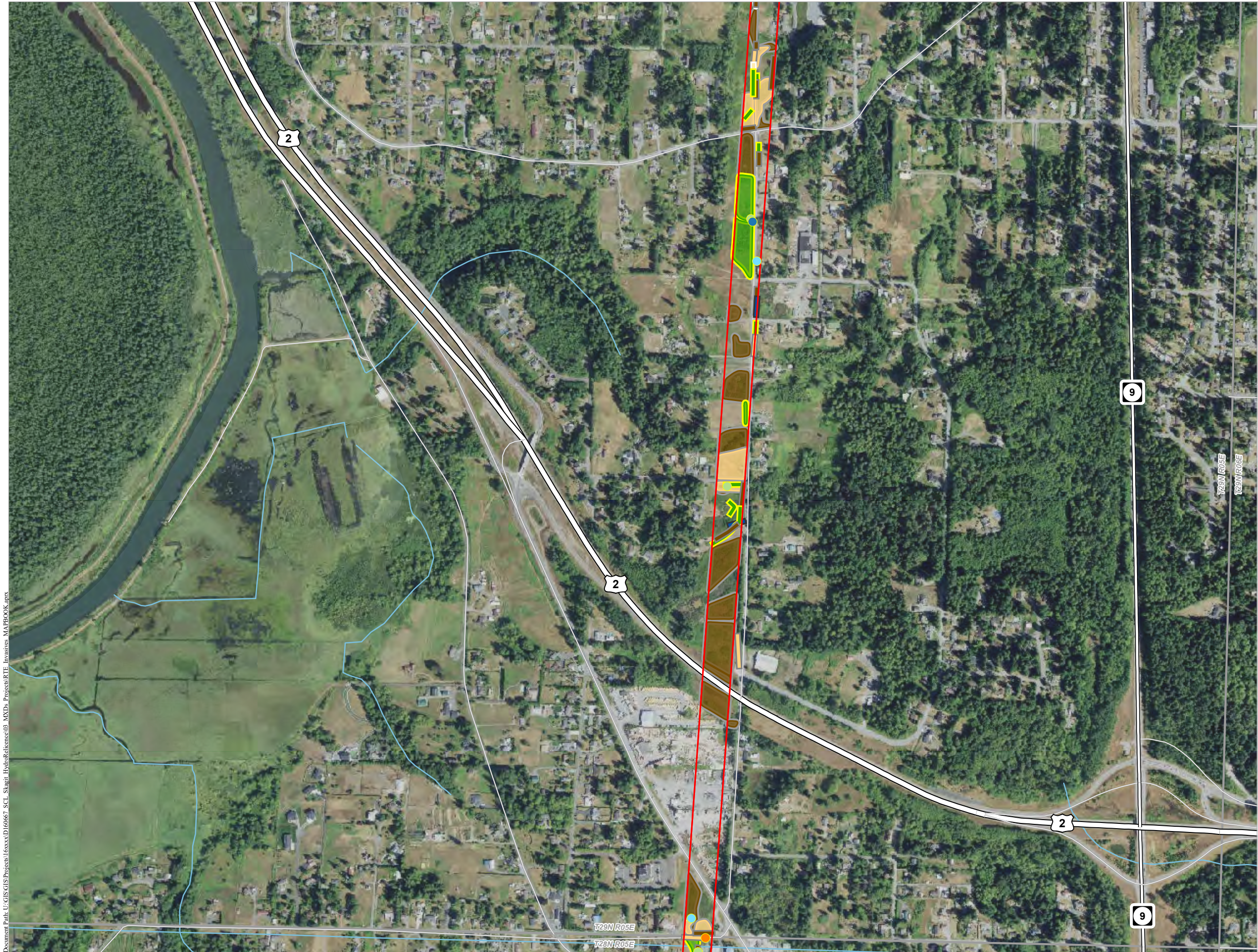


Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

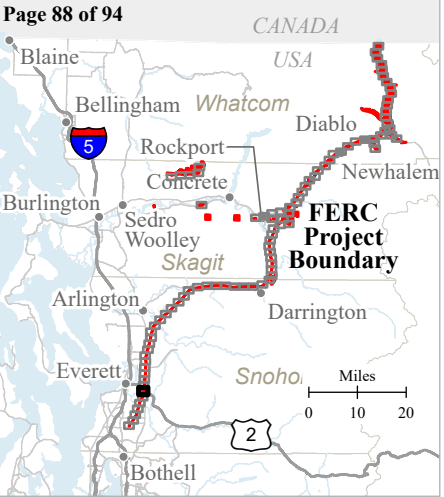
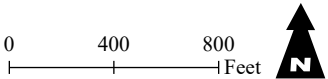
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Primary Highway
- Secondary Highway
- Other Road
- Streams

Invasive Point	Invasive Line	Invasive Polygon
COAR	CIAR	CIAR
COMA	CYSC	CYSC
CRMO	PHAR	PHAR
FAJA	RUBI	RUBI
	TAVU	

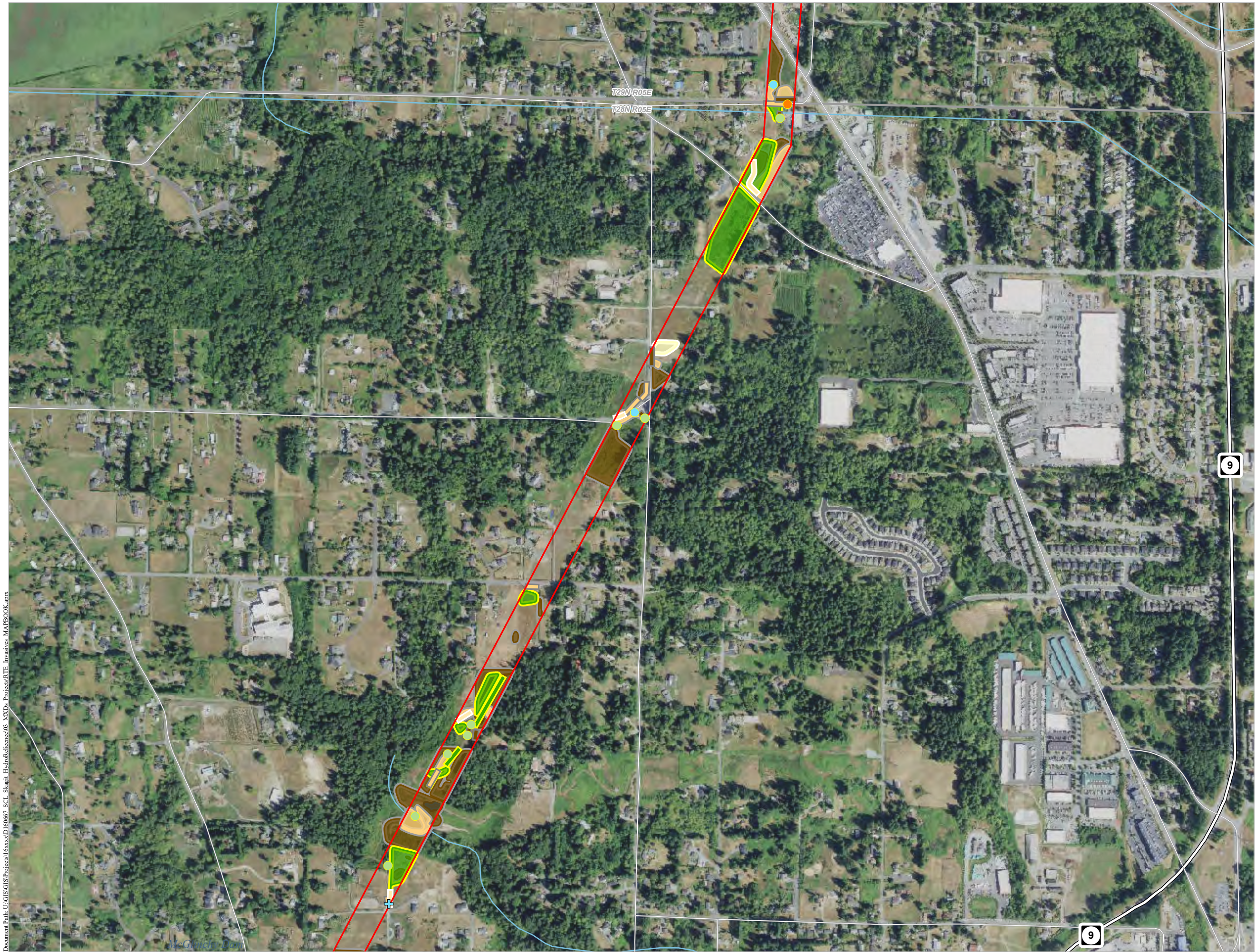


Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

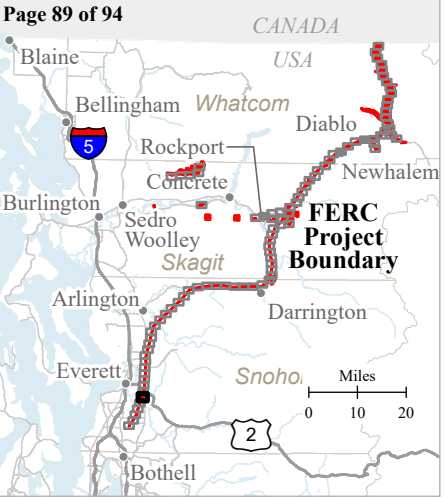
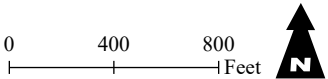
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\Reference\03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

Invasive Point	Invasive Line	Invasive Polygon
COAR	CIAR	CIAR
CRMO	CYSC	CYSC
FAJA	PHAR	PHAR
SOAU	RUBI	RUBI
		TAVU



Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

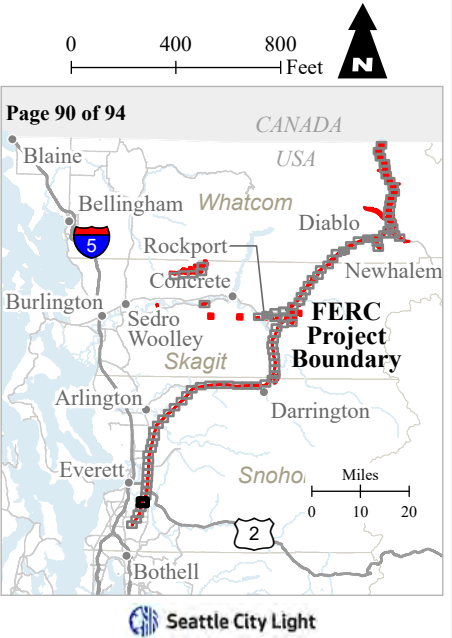
Document Path: U:\GIS\GIS\Projects\16xxxx\160667_SCL_Skagit_Hydro\References\03_MXD\Projects\RTE_Invasives_MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Other Road
- Streams

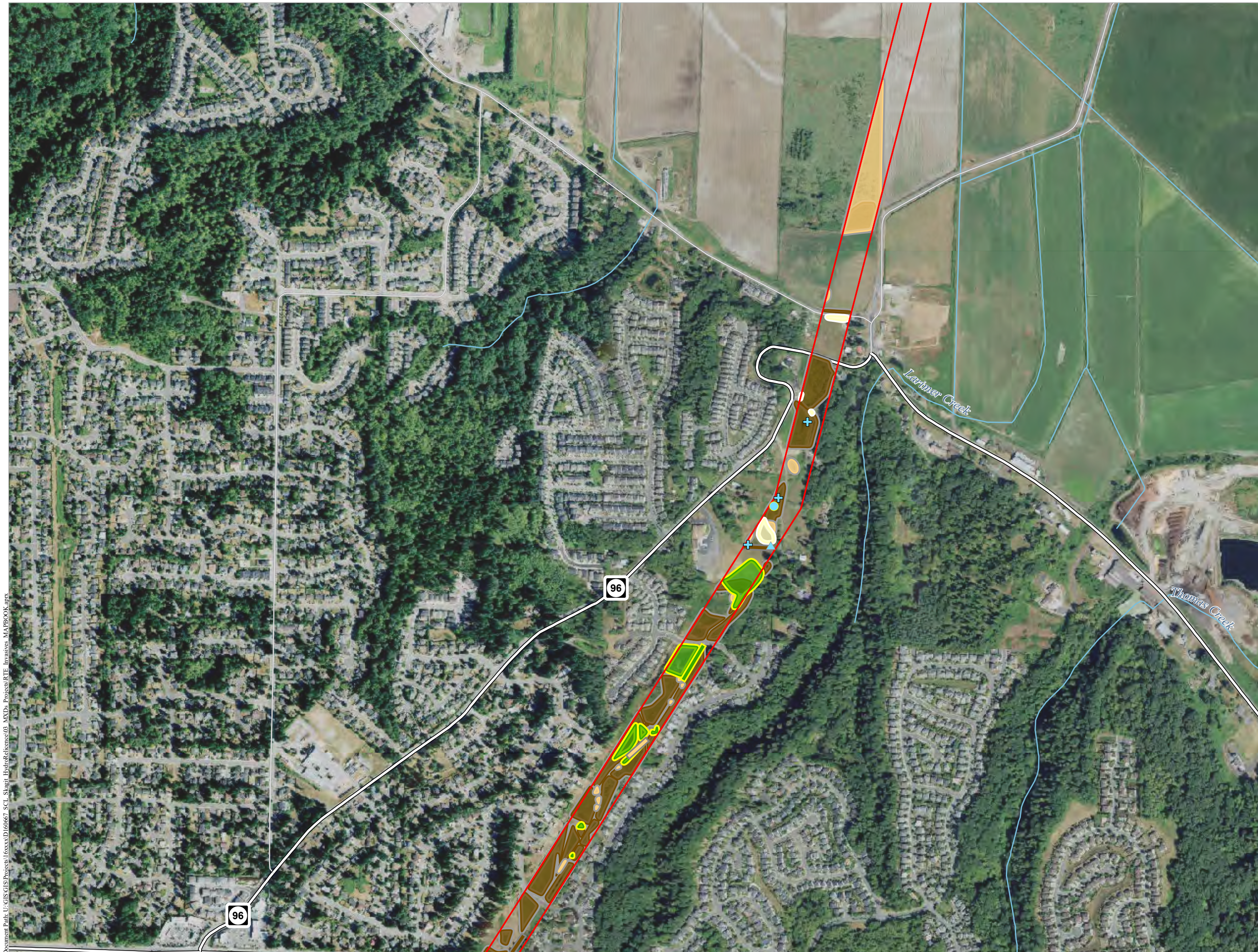
Invasive Point	Invasive Line	Invasive Polygon
CRMO	CIAR	CIAR
HEHE	CYSC	CYSC
SOAU	JAVU	ILAQ
	PHAR	PHAR
	RUBI	RUBI
		TAVU



SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit HydroReference03 MXDs\Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

FERC Project Boundary

Secondary Highway

Other Road

Streams

Invasive Point

COAR

ILAQ

SOAU

Invasive Line

CYSC

PHAR

RUBI

Invasive Polygon

CIAR

CYSC

JAVU

PHAR

RUBI

0400800

Feet

N

Page 91 of 94

Seattle City Light




SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

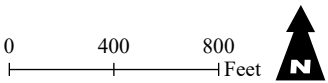
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\References\03 MXDs Projects\RTE Invasives MAPBOOK.aprx



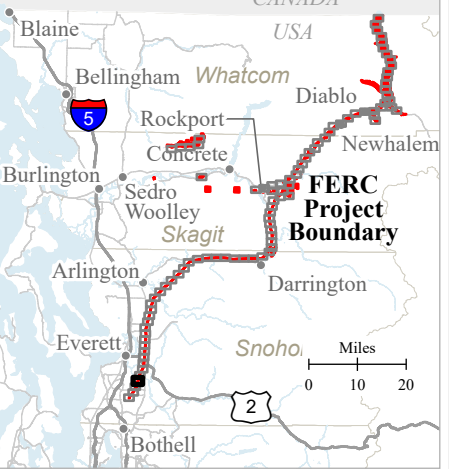
**TR-04 DRAFT INVASIVE
PLANTS SURVEY
RESULTS MAPBOOK**


-  FERC Project Boundary
-  Other Road
-  Streams

Invasive Polygon
 PHAR



Page 92 of 94

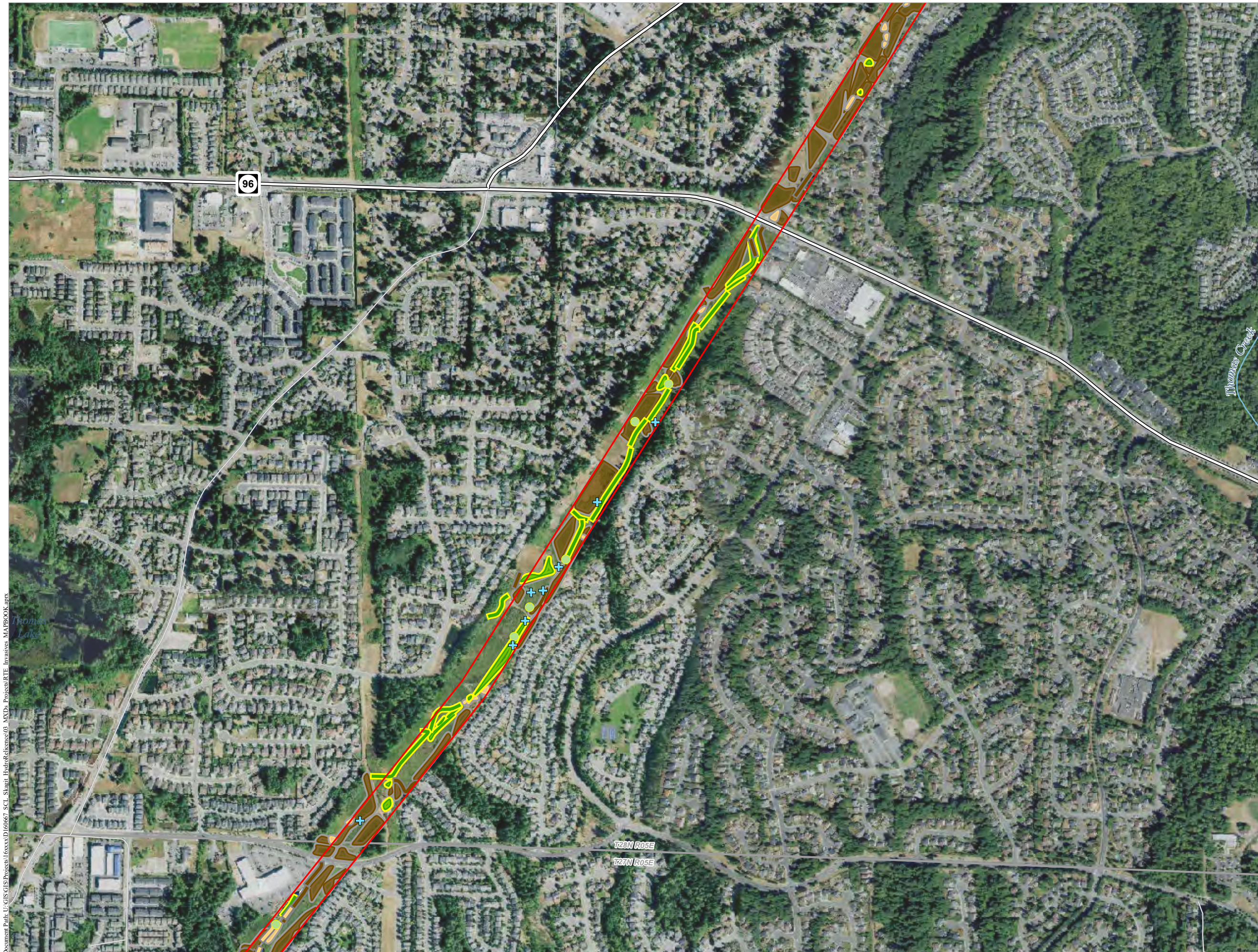


 Seattle City Light

**SKAGIT RIVER HYDROELECTRIC
PROJECT (FERC NO. 553)**

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the
accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

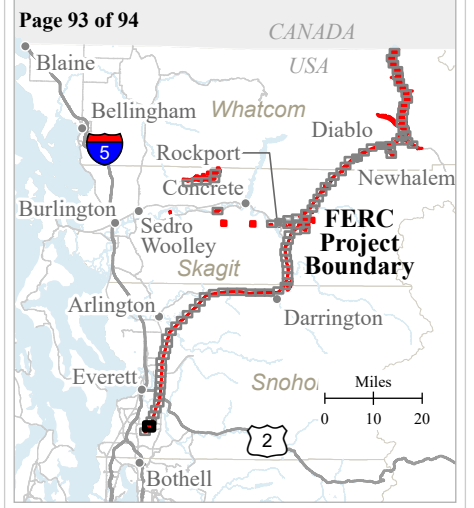
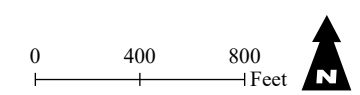
Document Path: U:\GIS\GIS\Projects\16xxxx\160667 SCL Skagit Hydro\Reference\03 MXDs Projects\RTE Invasives MAPBOOK.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Secondary Highway
- Other Road
- Streams

- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| ● CRMO | — CYSC | ■ CIAR |
| + SOAU | — PHAR | ■ CYSC |
| | — RUBI | ■ FAJA |
| | | ■ JAVU |
| | | ■ PHAR |
| | | ■ RUBI |
| | | ■ TAVU |

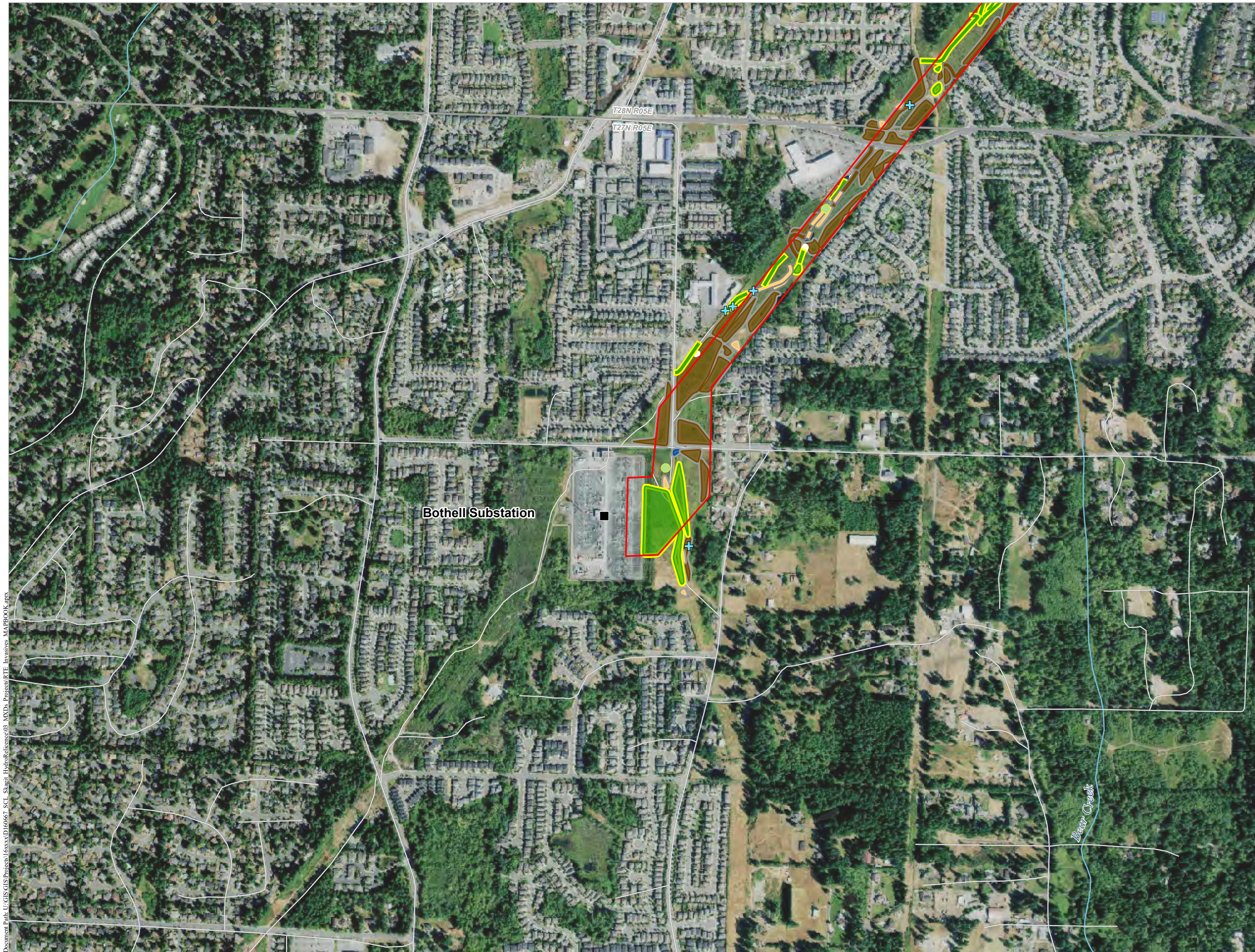


Seattle City Light

SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

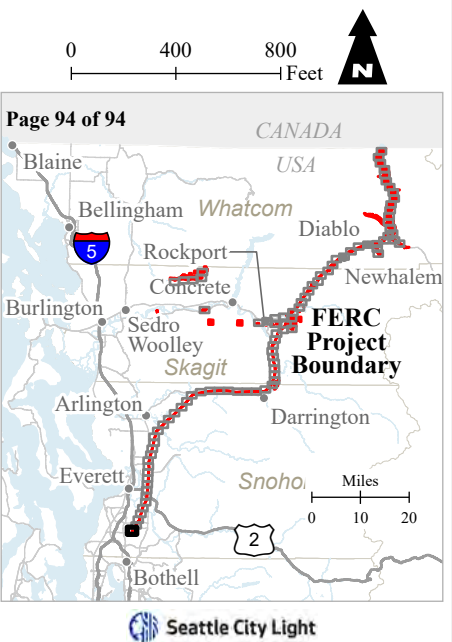
Document Path: U:\GIS\GIS\Projects\6xxxx\60667 SCL Skagit Hydro\References\03 MXDs\Projects\RTE Invasives MapBook.aprx



TR-04 DRAFT INVASIVE PLANTS SURVEY RESULTS MAPBOOK

- FERC Project Boundary
- Other Road
- Streams
- SCL Facility

- | Invasive Point | Invasive Line | Invasive Polygon |
|----------------|---------------|------------------|
| CRMO | CYSC | CIAR |
| SOAU | PHAR | CYSC |
| | RUBI | JAVU |
| | | PHAR |
| | | RUBI |
| | | TAVU |



SKAGIT RIVER HYDROELECTRIC PROJECT (FERC NO. 553)

Created on 12/8/2021 by ESA for Seattle City Light.
City Light provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of this data.
Data Source: [NAIP, 2015; NPS, 2020; SCL, 2020].

INVASIVE PLANTS STUDY INTERIM REPORT

ATTACHMENT E

ECOLOGICAL EFFECTS OF OBSERVED INVASIVE PLANT SPECIES

Table E-1. Ecological effects of observed invasive plant species (* denotes National Park Service First Priority Species).

Scientific Name	Common Name	State Listed	Invasive Traits	Allelopathic/ Toxic	Alters Soil Chemistry/ Fixes Nitrogen	Alters Succession	Reduces Biodiversity	Promotes Frequency and Novel Types of Disturbance	Alters Soil Biota/Soil Microbial Community	Alters Availability of Resources (e.g., Food for Pollinators, Fructivores, Herbivores)
<i>Acer platanoides</i> *	Norway maple	-	Invades woodlands by outcompeting native maple species due to its shade tolerance. Can reduce wildflower diversity because it forms a dense canopy. This species does not rely on disturbances, but has shade tolerant seedlings, to form populations (Webb et al. 2000).	-	-	X	X	-	-	X
<i>Acer pseudoplatanus</i> *	Sycamore maple	-	Produces large numbers of seeds, develops dense stands due to greater shade tolerance in invasive range (Shouman et al. 2017). Decomposing leaves can be allelopathic to some species (Rice 1984).	-	-	X	X	-	-	X
<i>Aegopodium podagraria</i>	Bishop's goutweed	-	Crowds out native species in floodplains, woodlands, and open areas that would normally develop into forest. New plants can grow from broken fragments of rhizomes. Once established, it is very difficult to eradicate (NRCS 2021).	-	-	X	X	-	-	-
<i>Arctium lappa</i> *	Greater burdock	-	Produces large numbers of seeds; large taproot makes it difficult to eradicate, can be a vector of powdery mildew (OSU 2021).	-	-	-	X	-	X	-
<i>Bromus tectorum</i>	Cheatgrass	-	Maturess earlier than native annual grasses and can outcompete them. Prolific seed producer that can greatly alter species composition of invaded habitats. Once seeds have matured, plants become dry and flammable, increasing fire risk (Colorado State Parks 2005).	-	-	X	X	X	-	X
<i>Buddleja davidii</i>	Butterfly bush	Class B	Forms dense, shrubby thickets. Supplants native nectar sources, reducing pollination. Difficult to eradicate due to its ability to regenerate from vegetative growth (JCNWCB 2021).	-	-	X	X	X	-	X
<i>Carduus pycnocephalus</i>	Italian thistle	Class A	Invades pastures and rangeland. Crowds out more desirable forage; dense infestations exclude livestock grazing as well as native plants.	X	-	-	X	-	X	X
<i>Campanula rapunculoides</i>	Creeping bellflower	-	May reduce soil moisture and nutrients (Royer and Dickinson 1999). Infestations are extremely difficult to eradicate due to its ability to grow vegetatively.	-	X	-	X	-	-	X
<i>Centaurea diffusa</i>	Diffuse knapweed	Class B	Knapweed infestations increase production costs for ranchers, impair the quality of wildlife habitat, decrease plant diversity, increase soil erosion rates, decrease the visual quality and appeal of recreational lands, and pose wildfire hazards.	X	-	X	X	X	X	X
<i>Centaurea x gerstlaueri</i>	Meadow knapweed	-	Meadow knapweed, a hybrid of black and brown knapweed, is an aggressive invasive plant species that spreads into pastures and meadows. It outcompetes desirable forage plants as well as other native plants species.	X	-	X	X	X	X	X
<i>Centaurea stoebe</i>	Spotted knapweed	Class B	Can quickly infest large areas. Each plant produces 1,000 seeds on average that can be viable up to 8 years. Chemical properties in knapweed can be carcinogenic in large quantities.	X	-	X	X	X	X	X

Scientific Name	Common Name	State Listed	Invasive Traits	Allelopathic/ Toxic	Alters Soil Chemistry/ Fixes Nitrogen	Alters Succession	Reduces Biodiversity	Promotes Frequency and Novel Types of Disturbance	Alters Soil Biota/Soil Microbial Community	Alters Availability of Resources (e.g., Food for Pollinators, Fructivores, Herbivores)
<i>Cirsium arvense</i>	Canadian thistle	Class C	Spreads quickly, replacing native plants. Canadian thistle is perennial and disperses a large number of seeds at reproductive maturity, and when coupled with its hearty root system can form clonal stands that can be difficult to control. Poses an economic threat to the agriculture industry by reducing crop yields. Drains nutrients from the soil and can be very damaging to pastures and crops. Uses large amounts of water and can make soil dry and increase erosion potential (Cameron and Wheeler 2020).	X	-	-	X	-	X	X
<i>Cirsium vulgare</i>	Bull thistle	Class C	Bull thistle may outcompete native plants and desirable wildlife and livestock forage plants. It can invade disturbed habitats and grow in dense thickets. Prolific seed producer.	-	-	-	X	-	-	X
<i>Clematis vitalba</i>	Traveler's-joy	Class C	Traveler's-joy blankets the ground, shrubs, and trees, blocking light and causing native vegetation to collapse. Reproduces by seed and can spread vegetatively by stem fragmentation. An estimated 17,000 viable seeds are produced per 0.5 square meters in areas where it is a canopy species.	-	-	X	X	X	-	-
<i>Convolvulus arvensis</i>	Field bindweed	Class C	Once established, field bindweed is nearly impossible to fully eradicate. It outcompetes native plant species and can reduce crop yields. It forms an extensive root system, often climbing or forming dense, tangled mats. It is an alternate host of the viruses that cause plant diseases.	-	-	X	X	X	-	-
<i>Conium maculatum</i>	Poison hemlock	Class B	Toxic to humans and animals due to alkaloid content. Crowds out native plant communities and desirable forage species and can contaminate perennial crops and harvested seed (DiTomaso et al. 2013).	X	-	-	-	X	-	-
<i>Crataegus monogyna</i>	English hawthorn	Class C	Can form thickets and block animal movement. Historically used in hedgerows to contain livestock. Dense growth can alter the structure of forest understories and open grasslands. Hybridization can alter the gene pool of the native species and create competition for resources and pollinators.	-	-	X	X	X	-	-
<i>Cytisus scoparius</i> *	Scot's broom	Class B	Crowds out native species and negatively affects wildlife habitat. It can form dense, impenetrable stands that degrade farmland and create fire hazards. Dense stands may prevent or slow forest regeneration, restoration of upland sites, and wetland buffers. Scot's broom produces toxic compounds, which in large amounts can cause mild poisoning in animals such as horses.	X	X	X	X	X	X	X
<i>Daphne laureola</i>	Spurge-laurel	Class B	Can rapidly colonize areas, forming monotypic stands and competing with native plants. All parts of the plant are highly toxic.	X	-	-	X	-	-	X
<i>Echium vulgare</i>	Common viper's bugloss	Class B	Plants contain hepatotoxic pyrrolizidine alkaloids that can be toxic when consumed in large amounts, its hairs can cause contact injury, and it also serves as an alternate host for fungal pathogens (Klemow et al. 2002).	X	-	-	X	-	-	-
<i>Euphorbia oblongata</i>	Egg-leaf spurge	Class A	Heavy root is difficult to remove, and new shoots can grow from buds or root crown. Egg-leaf spurge also has a toxic white latex sap common to the <i>Euphorbia</i> species.	X	-	-	X	-	-	-

Scientific Name	Common Name	State Listed	Invasive Traits	Allelopathic/ Toxic	Alters Soil Chemistry/ Fixes Nitrogen	Alters Succession	Reduces Biodiversity	Promotes Frequency and Novel Types of Disturbance	Alters Soil Biota/Soil Microbial Community	Alters Availability of Resources (e.g., Food for Pollinators, Fructivores, Herbivores)
<i>Fallopia japonica</i>	Japanese knotweed	Class B	Grows vigorously, creating dense colonies that limit native plant growth. Once established, it is very difficult to get rid of. Can create a fire hazard in the dormant season. This perennial plant is difficult to control because it has extremely vigorous rhizomes that form a deep, dense mat. In addition, the plant can resprout from fragments; along streams, plant parts may fall into the water to create new infestations downstream.	-	-	X	X	X	-	X
<i>Geranium robertianum</i>	Herb-Robert	Class B	Poses a threat to the forest understory and to native plant diversity, capable of growing under a closed canopy. Strong odor may trigger asthma attacks (Tisch 1992).	-	-	X	X	X	-	X
<i>Hedera helix</i>	English ivy	-	Can outcompete native plants, reducing animal foraging habitat. It inhibits regeneration of understory plants and overstory trees by shading them out. May cause damage to trees by adding weight to their canopy that also may act as a sail. The sap of the stems can cause skin irritations and rashes to sensitive individuals. Consuming large amounts of leaves and fruits can be toxic to people and cattle.	-	-	X	X	X	-	-
<i>Hieracium aurantiacum</i>	Hawkweed, orange	Class B	Aggressive, unpalatable competitor of pasture and range plant species, crowding out more desirable forage. Can spread through seed, stolon, and rhizome.	-	-	-	X	X	-	X
<i>Hieracium pilosella</i>	Hawkweed, Mouse-eared	Class B	Creeping growth forms mats of rosettes that prevent other plants from establishing seedlings. It outcompetes pasture and native plants. As desirable forage plants are replaced by the somewhat unpalatable hawkweed, biodiversity decreases (PCNWCB 2021).	-	-	-	X	X	-	X
<i>Hieracium piloselloides</i>	Hawkweed, tall	-	Nonnative hawkweed species and hybrids are invasive, spread readily, and have negative effects to rangeland and other habitats, especially in mid to upper elevations and in areas with low fertility soils. Viable seeds can spread without pollination.	-	-	-	X	X	-	X
<i>Hypericum perforatum</i> *	St. John's-wort	Class C	Common St. John's-wort spreads easily to new sites, outcompeting native plants. Over-exposure can cause various animal health problems including severe skin lesions and necrosis when skin becomes hypersensitive to sunlight.	X	-	-	X	X	-	X
<i>Ilex aquifolium</i> *	English holly	-	In forests, English holly can form dense thickets that suppress native shrubs and young trees. It also reproduces by suckers, and branches can root where they touch the ground. English holly is tolerant of a wide range of soil, moisture, and light conditions, allowing it to invade a variety of sites. All parts of the plant can be toxic to humans, if ingested in large quantities (WSNWCB 2021).	X	X	X	X	X	-	-
<i>Jacobaea vulgaris</i>	Tansy ragwort	Class B	Invades disturbed areas by crowding out native species; can be toxic to humans and animals.	X	-	-	X	-	-	X

Scientific Name	Common Name	State Listed	Invasive Traits	Allelopathic/ Toxic	Alters Soil Chemistry/ Fixes Nitrogen	Alters Succession	Reduces Biodiversity	Promotes Frequency and Novel Types of Disturbance	Alters Soil Biota/Soil Microbial Community	Alters Availability of Resources (e.g., Food for Pollinators, Fructivores, Herbivores)
<i>Juglans nigra</i> *	Black walnut	-	Root system and leaves allelopathic. Most toxicity symptoms arise when juglone-sensitive plants are placed within the walnut’s root zone, an average of 50 to 60 feet from the trunk of a large tree. Plants sensitive to juglone show signs of wilting, yellow leaves, stunted growth, and may die (Coladonato 1991).	X	-	-	-	-	-	-
<i>Leucanthemum vulgare</i>	Oxeye daisy	Class C	Aggressively invades fields where it forms dense populations and decreases plant species diversity. In areas of heavy infestation, bare soil is more common, which increases the potential for soil erosion (Olson and Wallander 1999).	-	-	-	X	-	X	X
<i>Linaria dalmatica</i>	Dalmatian toadflax	Class B	Mature plants are strongly competitive, especially with shallow-rooted perennials and winter annuals. Dalmatian toadflax causes negative effects in pastures, rangelands, and natural areas, where it outcompetes natives or other desirable species.	-	-	-	X	X	-	X
<i>Linaria purpurea</i> *	Purple toadflax	-	This species is not known to be invasive. Linaria species can spread by seed and vegetatively by root fragments; seeds can be viable for 8 or more years. Contains alkaloids.	X	-	-	-	-	-	-
<i>Lunaria annua</i> *	Honesty	-	This species is not known to be invasive. Likely outcompetes native plants.	-	-	-	X	-	-	-
<i>Phalaris arundinacea</i>	Reed canarygrass	Class C	Extremely aggressive and often forms persistent monocultures in wetlands and riparian areas. Infestations threaten the diversity of these areas, since the plant chokes out native plants and grows too densely to provide adequate cover for small mammals and waterfowl. The grass can also lead to increased siltation along drainage ditches and streams. Once established, reed canarygrass is difficult to control because it spreads rapidly by rhizomes.	-	-	X	X	-	-	-
<i>Potentilla recta</i>	Sulphur cinquefoil	Class B	Can form monocultures over large areas of rangeland, roadside, waste places, and unworked fields, where it is not easily controlled by mowing.	-	-	X	X	-	-	-
<i>Prunus cerasifera</i> *	Cherry plum	-	This species is not known to be invasive. Likely outcompetes native plants.	-	-	-	X	-	-	-
<i>Prunus laurocerasus</i> *	Cherry-laurel	-	Outcompetes native forest species such as tree seedlings and native shrubs, replaces native canopy trees over time. Very fast-growing and tolerant of disturbance and a wide range of conditions. Has the potential to be a serious threat to native forest land in the Puget Sound region. Cherry-laurel is poisonous to humans when eaten (KCNWCB 2021a).	X	-	X	X	-	-	-
<i>Robinia hispida</i> *	Bristly locust	-	Not listed in WA as invasive; likely outcompetes native plants, plants in the legume family are also known to change soil chemistry (Lazzaro et al. 2018).	-	X	X	X	-	X	X
<i>Rubus bifrons</i>	Himalayan blackberry	Class C	Spreads aggressively via numerous asexual means and is successfully dispersed by birds and mammals. The negative effects of this species can be severe to both native plants on the site as well as livestock and wildlife due to its ability to form dense thickets and outcompete native plants. Can be a fire hazard and a vector for plant diseases that affect agriculture.	-	-	X	X	X	-	X

Scientific Name	Common Name	State Listed	Invasive Traits	Allelopathic/ Toxic	Alters Soil Chemistry/ Fixes Nitrogen	Alters Succession	Reduces Biodiversity	Promotes Frequency and Novel Types of Disturbance	Alters Soil Biota/Soil Microbial Community	Alters Availability of Resources (e.g., Food for Pollinators, Fructivores, Herbivores)
<i>Sorbus aucuparia</i> *	European mountain-ash	-	Outcompetes native plants and trees (KCNWCB 2021b).	-	-	X	X	X	-	X
<i>Tanacetum vulgare</i>	Common tansy	Class C	Grows in thick, expanding stands that crowd out native and other desirable plants. Has high diversity of chemotypes that can vary depending on population, habitat, and time of year, and can be beneficial for invasion as it may impede the adaption potential of biological control agents (DiTomaso et al. 2013). Plants can quickly spread after soil disturbance and overgrazing.	X	-	-	X	-	-	-
<i>Verbascum thapsus</i> *	Flannel mullein	-	Biennial plant that reproduces by prolific seeds. The taproot of this species can access soil moisture from a deeper profile at a much better rate than fibrous roots of pasture grasses, giving it a competitive advantage, especially in dry years.	-	-	-	X	-	-	X
<i>Vinca minor</i> *	Lesser periwinkle	-	Escapes cultivation and can become invasive in forested understory and along shaded margins. The stems sprawl along the ground, producing a mat of vegetation that excludes most other plants. Tolerates poor soils and spreads primarily by underground rhizomes and stolons that root at the tips.	-	-	X	X	-	-	-

Table E-2. Potential pathways and vectors of observed target invasive plant species.

Scientific Name	Common Name	Potential Pathways	Potential Vector
<i>Acer platanoides</i>	Norway maple	Landscaping (introduced as an ornamental species)	Natural: wind, river, and animal dispersal (PCA 2005).
<i>Acer pseudoplatanus</i>	Sycamore maple	Landscaping (introduced as an ornamental species)	Natural: wind, river, and animal dispersal.
<i>Aegopodium podagraria</i>	Bishop's goutweed	Landscaping (introduced as an ornamental species)	Anthropogenic: Most colonies spread to neighboring natural areas from intentional plantings, or by the dumping of yard waste that includes discarded rhizomes (PCA 2005).
<i>Arctium lappa</i>	Greater burdock	Roads Maintenance Vegetation Management Recreation	Natural: Produces prolific seed heads that can be spread naturally, by clinging to animals. Anthropogenic: Clings to clothing or equipment for long periods of time.
<i>Bromus tectorum</i>	Cheatgrass	Roads Maintenance Vegetation Management Recreation Agriculture	Natural: wind, river, and animal dispersal. Anthropogenic: Seeds adhere easily to clothing and can be carried on undercarriages and tires of vehicles for long distances, as well as maintenance equipment. Seed is often in grain, hay, and straw for livestock (USDA 2014a).
<i>Buddleja davidii</i>	Butterfly bush	Landscaping (introduced as an ornamental species)	Natural: produces abundant amounts of very lightweight, winged seeds that are dispersed by wind and water (KCNWCB 2018a).
<i>Carduus pycnocephalus</i>	Italian thistle	Roads Agriculture	Natural: wind and animals. Anthropogenic; Seeds can also attach onto vehicles and can also be spread through contaminated hay (CIPC 2022a).
<i>Campanula rapunculoides</i>	Creeping bellflower	Landscaping (introduced as an ornamental species)	Natural: primarily wind.
<i>Centaurea diffusa</i>	Diffuse knapweed	Roads Maintenance Vegetation Management Agriculture	Natural: wind, water and animal dispersal. Anthropogenic: Motorized vehicles are the greatest contributor to the spread of knapweed. Can also be spread by machinery, gravel distribution, and road construction and maintenance. Contaminated hay (KCNWCB 2010).

Scientific Name	Common Name	Potential Pathways	Potential Vector
<i>Centaurea ×gerstlaueri</i>	Meadow knapweed	Roads Maintenance Vegetation Management Agriculture	See <i>Centaurea diffusa</i> above.
<i>Centaurea stoebe</i>	Spotted knapweed	Roads Maintenance Vegetation Management Agriculture	See <i>Centaurea diffusa</i> above.
<i>Cirsium arvense</i>	Canadian thistle	Roads Maintenance Vegetation Management Recreation Agriculture	Natural: wind, water, animals (fur). Anthropogenic: Seeds also move by attaching to clothing, equipment, and vehicles (KCNWCB 2018b). Found in contaminated crop and hay and can be transferred via irrigation channels (CABI 2022).
<i>Cirsium vulgare</i>	Bull thistle	Roads Maintenance Vegetation Management Recreation Agriculture	See <i>Cirsium arvense</i> above
<i>Clematis vitalba</i>	Traveler's-joy	Landscaping (introduced as an ornamental species)	Natural: wind and water.
<i>Convolvulus arvensis</i>	Field bindweed	Landscaping (introduced as ornamental species) Roads Maintenance Vegetation Management Agriculture	Natural: primarily animal dispersal. Anthropogenic: spread by irrigation/drainage water, machinery, and contaminated crop seed (WSNWCB 2022a).
<i>Conium maculatum</i>	Poison hemlock	Landscaping (originally introduced as ornamental) Roads Maintenance Vegetation Management	Natural: animals, water, and to a limited extent wind (NPS 2010). Anthropogenic: spread via mowing or maintenance equipment (SICWMA 2012).

Scientific Name	Common Name	Potential Pathways	Potential Vector
<i>Crataegus monogyna</i>	English hawthorn	Landscaping (introduced to form hedgerows to contain livestock) (WSNWCB 2022b). Roads Maintenance Vegetation Management	Natural: primarily animals and water. Anthropogenic: also be dispersed by human activity, vehicles, soil, water movement (CIPC 2022b).
<i>Cytisus scoparius</i>	Scot's broom	Roads Maintenance Vegetation Management	Natural: ballistic seed dispersal and further disperse by attaching to animals. Anthropogenic: vehicles, or in mud clinging to machinery/equipment (CIPC 2022c).
<i>Daphne laureola</i>	Spurge-laurel	Landscaping (introduced as an ornamental species)	Natural: primarily animals (KCNWCB 2021c).
<i>Echium vulgare</i>	Common viper's bugloss	Roads Maintenance Vegetation Management Agriculture	Natural: primarily animals (fur) and water, and lesser so, wind. Anthropogenic: Seeds easily get caught in fabrics and lodge in equipment and vehicles; contaminant in hay and grain (WSNWCB 2015).
<i>Euphorbia oblongata</i>	Egg-leaf spurge	Landscaping (introduced as an ornamental species)	Natural: ballistic seed dispersal and extensive roots.
<i>Fallopia japonica</i>	Japanese knotweed	Maintenance Vegetation Management	Natural: primarily water. Anthropogenic: Fragments of plants can attach to equipment and be transferred to other sites. Incidental dumping or reuse of soil contaminated with knotweed stem, rhizomes, or seeds can start a new infestation (WISC 2014).
<i>Geranium robertianum</i>	Herb-Robert	Roads Maintenance Vegetation Management Recreation	Natural: primarily water and animals. Anthropogenic: Seeds are sticky and can easily stick to clothing, vehicles, and equipment.
<i>Hedera helix</i>	English ivy	Roads Maintenance Vegetation Management	Natural: primarily animals (birds). Anthropogenic: Vines have a glue-like substance that can easily stick to equipment/machinery during maintenance activities (KCNWCB 2020a).

Scientific Name	Common Name	Potential Pathways	Potential Vector
<i>Hieracium aurantiacum</i>	Hawkweed, orange	Landscaping (introduced as an ornamental species) Roads Maintenance Vegetation Management Recreation	Natural: water, wind, and animals. Anthropogenic: Seeds can be transferred via clothing and equipment or contaminated soil (USFS 2005).
<i>Hieracium pilosella</i>	Hawkweed, mouse-eared	Roads Maintenance Vegetation Management Recreation	See <i>Hieracium aurantiacum</i> above.
<i>Hieracium piloselloides</i>	Hawkweed, tall	Roads Maintenance Vegetation Management Recreation	See <i>Hieracium aurantiacum</i> above.
<i>Hypericum perforatum</i>	St. John's-wort	Roads Maintenance Vegetation Management Recreation	See <i>Hieracium aurantiacum</i> above.
<i>Ilex aquifolium</i>	English holly	Landscaping (introduced as an ornamental species)	Natural: primarily animals (birds). Can also grow by suckering and layering. Anthropogenic: Incidental dumping or reuse of soil contaminated with roots/stems can start new infestations (KCNWCB 2020b).
<i>Jacobaea vulgaris</i>	Tansy ragwort	Roads Maintenance Vegetation Management	Natural: wind and animals (on fur). Anthropogenic: Can easily attach to equipment and vehicles. Spread in contaminated hay (CGCWMA 2022).
<i>Juglans nigra</i>	Black walnut	Landscaping	Natural: primarily water and animals.
<i>Leucanthemum vulgare</i>	Oxeye daisy	Roads Maintenance Vegetation Management Recreation	Natural: primarily wind and water. Anthropogenic: Seed can also stick to mud on vehicles, machinery/equipment, and shoes.
<i>Linaria dalmatica</i>	Dalmatian toadflax	Landscaping (introduced as an ornamental species)	Natural: Seed viability is low. Primarily spreads through vegetative growth (USDA 2014b).

Scientific Name	Common Name	Potential Pathways	Potential Vector
<i>Linaria purpurea</i>	Purple toadflax	Landscaping (introduced as an ornamental species)	See <i>Linaria dalmatica</i> above.
<i>Lunaria annua</i>	Honesty	Landscaping (introduced as an ornamental species)	See <i>Linaria dalmatica</i> above.
<i>Phalaris arundinacea</i>	Reed canarygrass	Roads Maintenance Vegetation Management Recreation	Natural: water, wind, and animals. Anthropogenic: Seed can also stick to mud on vehicles, machinery/equipment, and shoes.
<i>Potentilla recta</i>	Sulphur cinquefoil	Roads Maintenance Vegetation Management Recreation	Natural: primarily animals (on fur). Anthropogenic: seeds can also be spread by contaminated dirt on machinery/equipment, vehicles, and shoes (Duncan 2019).
<i>Prunus cerasifera</i>	Cherry plum	Landscaping (introduced as an ornamental species)	Natural: primarily animals.
<i>Prunus laurocerasus</i>	Cherry-laurel	Landscaping (introduced as an ornamental species)	Primary: primarily animals. Anthropogenic: Can also be spread by the dumping of yard waste that includes clippings or fruit (KCNWCB 2021d).
<i>Robinia hispida</i>	Bristly locust	Landscaping (introduced as an ornamental species)	Natural: primarily wind. Can also grow by suckering. Anthropogenic: Incidental dumping or reuse of soil contaminated with roots/stems can start new infestations (NCSU 2022).
<i>Rubus bifrons</i>	Himalayan blackberry	Primarily natural	Natural: primarily animals and water (CIPS 2022d).
<i>Sorbus aucuparia</i>	European mountain-ash	Landscaping (introduced as an ornamental species)	Natural: primarily animals (birds).
<i>Tanacetum vulgare</i>	Common tansy	Roads Maintenance Vegetation Management Recreation	Natural: water, wind, and animals. Anthropogenic: Seed can also stick to mud on vehicles, machinery/equipment, and shoes.
<i>Verbascum thapsus</i>	Flannel mullein	Roads Maintenance	Natural: primarily wind and animals. Anthropogenic: Movement of contaminated soil for road maintenance/construction also hastens spread (CIPS 2022e).

Scientific Name	Common Name	Potential Pathways	Potential Vector
<i>Vinca minor</i>	Lesser periwinkle	Landscaping (introduced as an ornamental species)	<p>Natural: primarily water.</p> <p>Anthropogenic: spread to neighboring natural areas from intentional plantings, or by the dumping of yard waste that includes discarded rhizomes. Rhizomes can also wash downstream and start new invasions.</p>