

IDX FALL 2015

POTENTIAL PILOT-PLANT EVALUATION

ROAD MAP

INTRO BY DANE

IDX TEAM MEMBERS

12 SITES

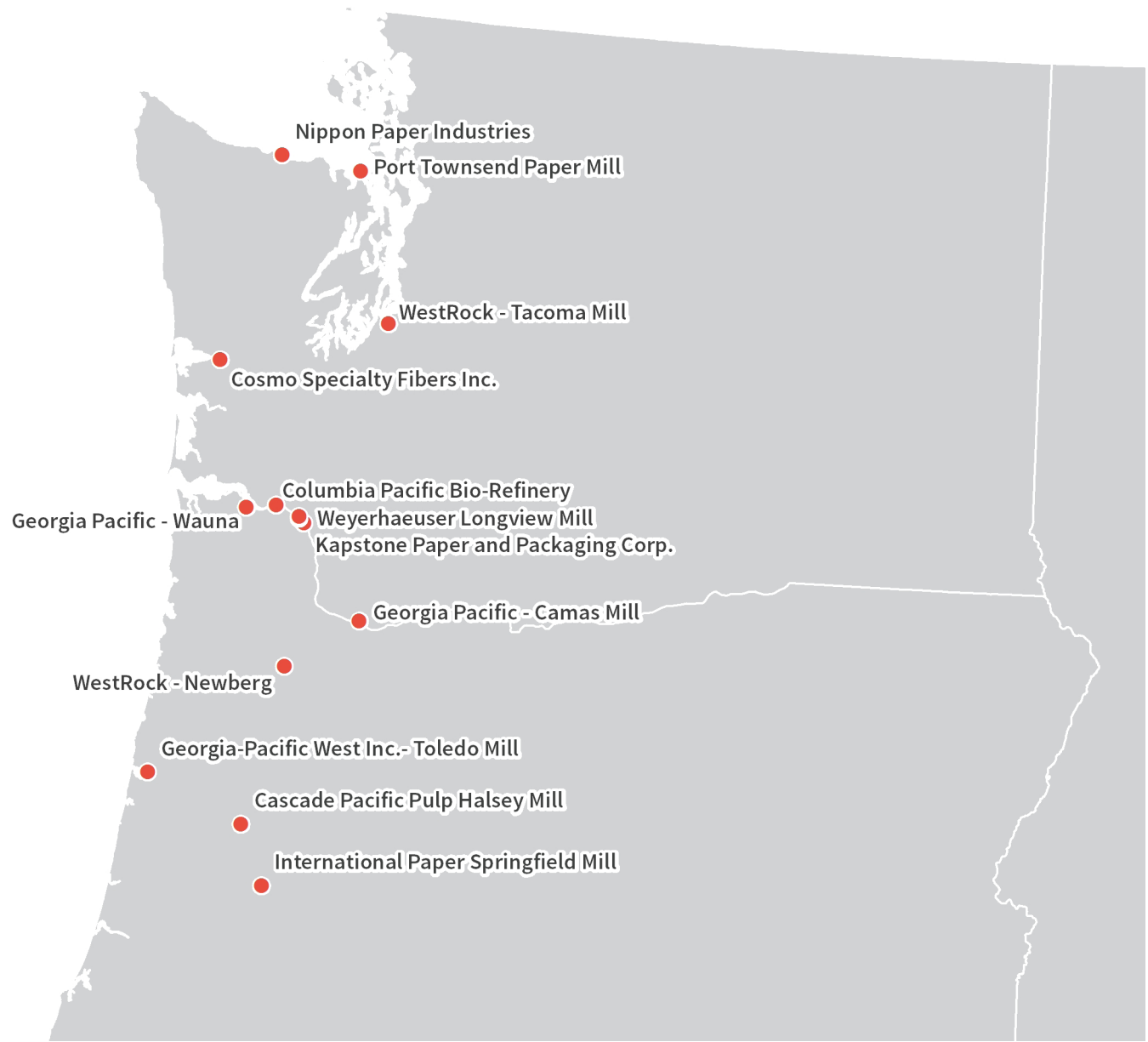
5-6 MIN SITE OVERVIEW

4-5 MIN SITE Q&A

WRAP-UP DISCUSSION



13 POTENTIAL PILOT-PLANT SITES



IDX STUDY

Dane Camenzind will introduce the 13 sites.

Each IDX Team Member was assigned 1-2 sites to present to you today.

As you can see, our 13 preliminary sites, from the work of Natalie Martinkus through discussions with Professor Olsen we identified as having potential to be co-developed into the new and emerging iso-butanol/biofuel industry.

All of the 12 sites provided to us are West of the Cascades,

Georgia Pacific - Wauna

CLATSKANIE, CLATSOP COUNTY, OR



STRENGTHS

- Greenfield adjacent to property (454.16 acres)
- Greyfield adjacent to the existing Georgia Pacific Facility (329.86 acres)
- On-site Wastewater treatment (33.8 MGD)
- Located on Columbia River with port access
- Existing rail lines on site



WEAKNESSES

- Large elevation changes
- Greenfield owed by Georgia Pacific consist of :
 - Designated Forestland (145.14 acres) ; and
 - Highest and Best Use Forestland (309.02 acres)
- Northwest rail lines are washed out



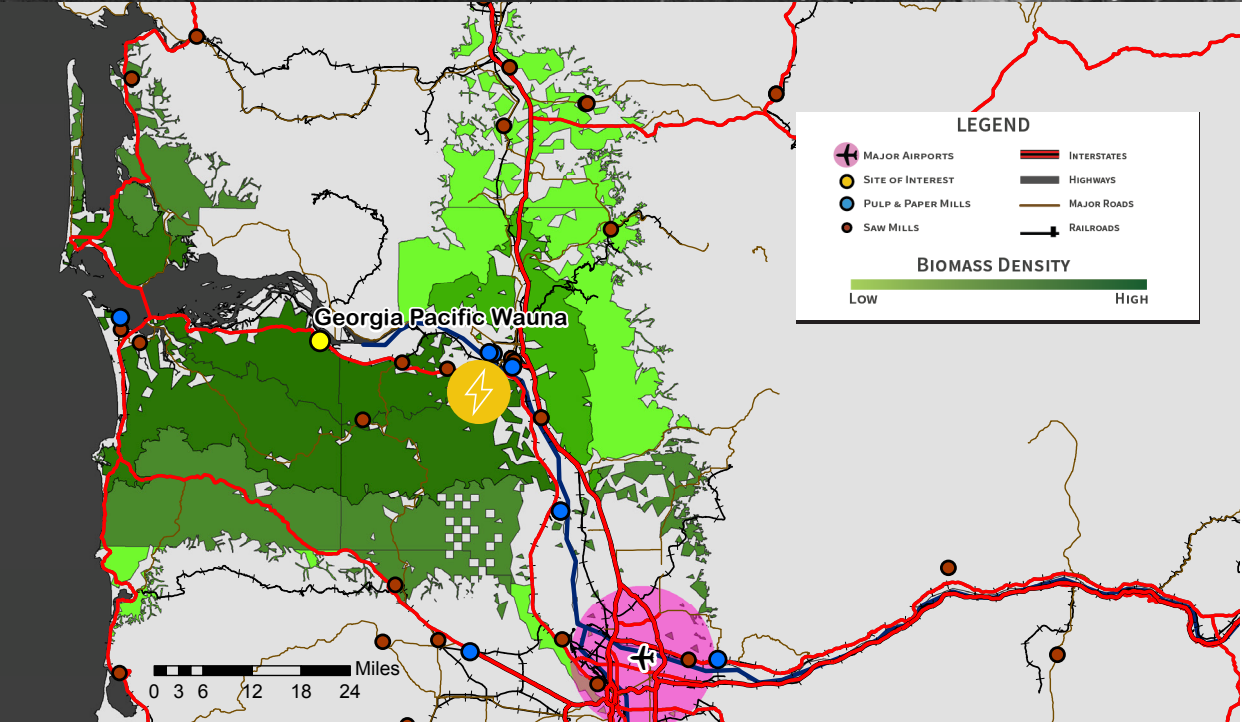
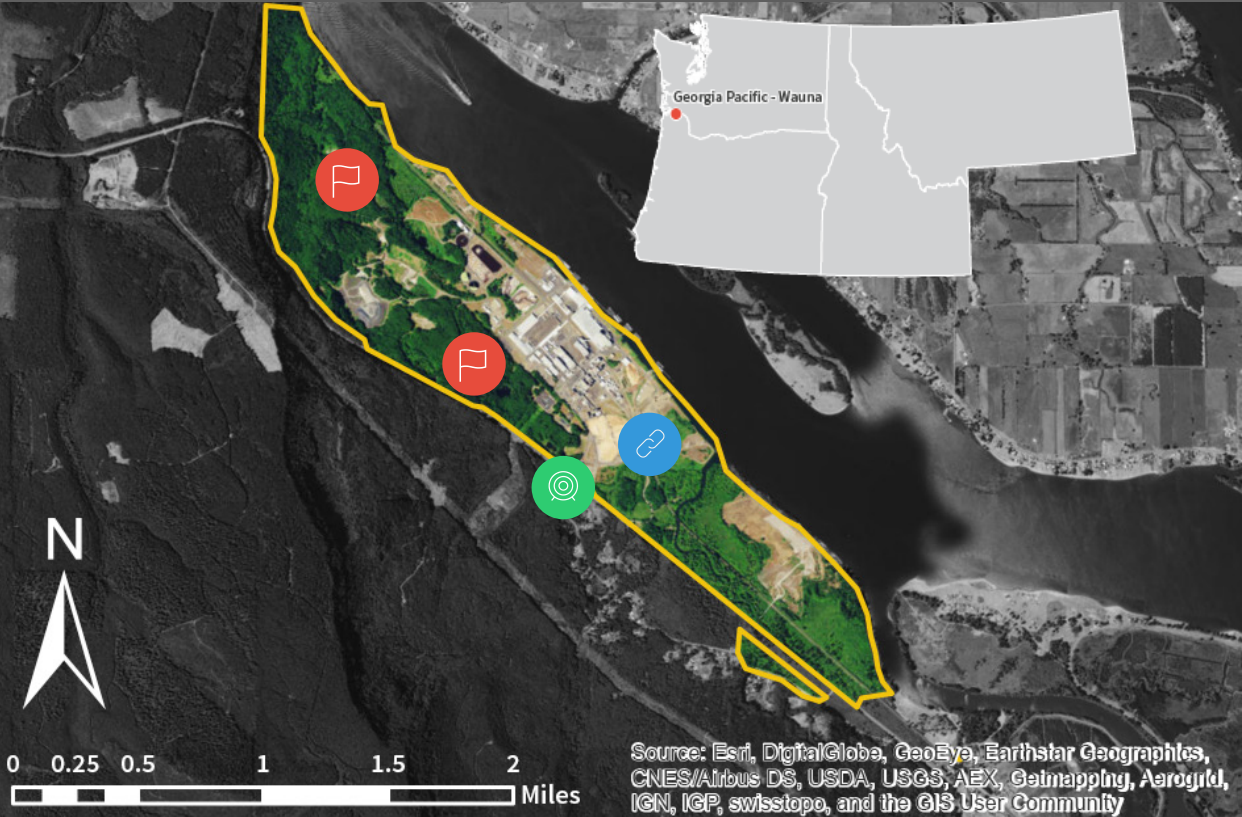
OPPORTUNITIES

- I-5 is approximately 40 miles from facility
- US-30 is adjacent to facility
- Biomass Availability (700,000 BDT within 90 Minutes)



THREATS

- Available biomass may interfere with other competitors in the area
 - Kapstone (Longview, WA) - Wood Boiler
 - Weyerhaeuser (Longview, WA) - Wood Boiler
- Conversion of forestland into industrial land is costly



SITE DESCRIPTION

- 1,213 Acres
- Kraft Process
- Products: Toilet tissue, paper towels, napkins
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Clatskanie PUD: \$0.0425/Kwh
- NW Natural Gas: \$16.60/Mcf
- Co-gen boilers on-site - Y

TRANSPORTATION

- | | | |
|---------|---|----------|
| • Road | Y | <1 Miles |
| • Rail | Y | On Site |
| • Barge | Y | On Site |
| • I-5 | | 32 Miles |

REGIONAL MARKET

- SEATAC: 146 Miles
- PDX: 73 Miles

BIOMASS QUANTITIES

- 30 Minutes: 90K BDT
- 60 Minutes: 350K BDT
- 90 Minutes: 700K BDT

INCENTIVES

- New Market Tax Incentive
- Biofuels Production Property Tax Exemption-OR
- Biomass Eligibility for Tax Credits-OR

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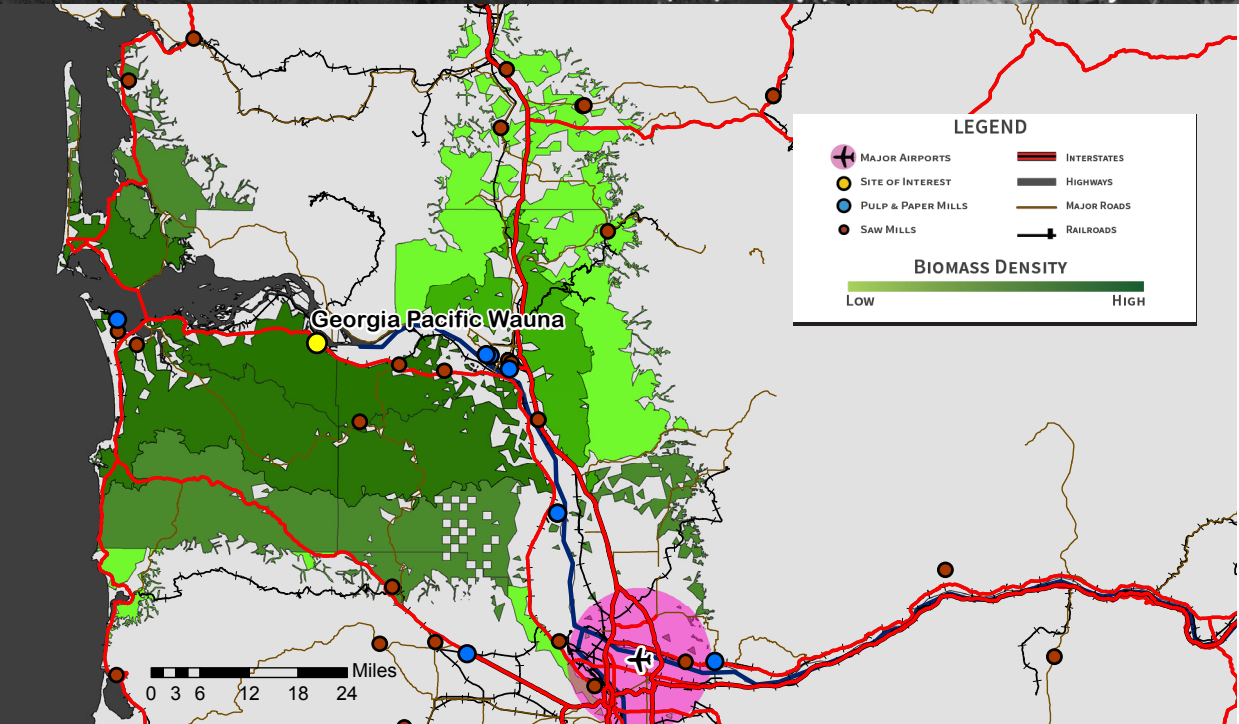
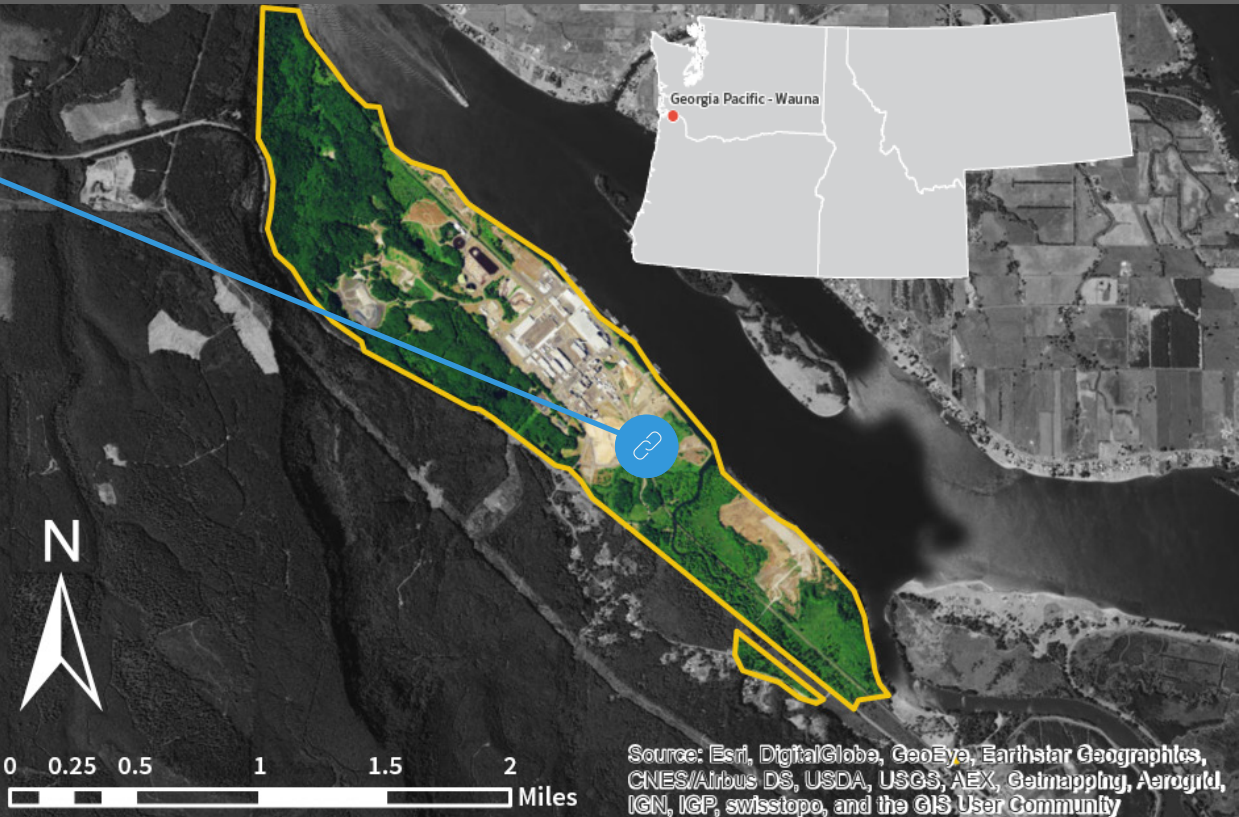
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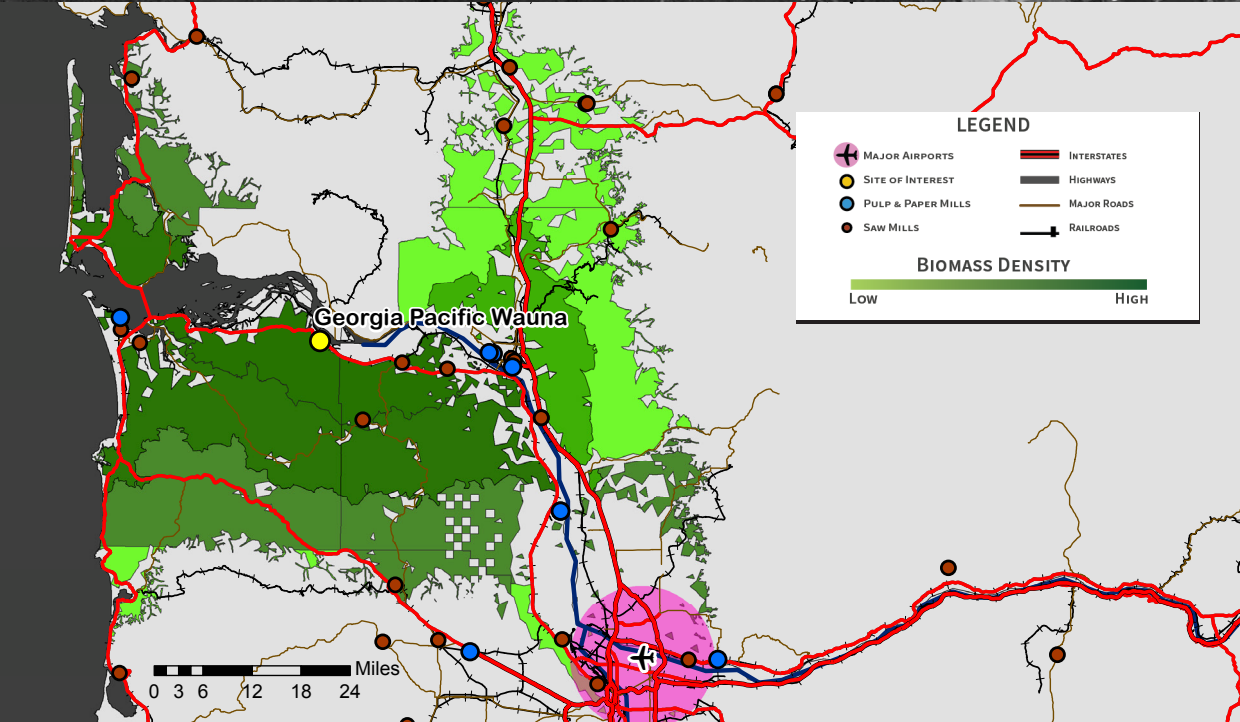
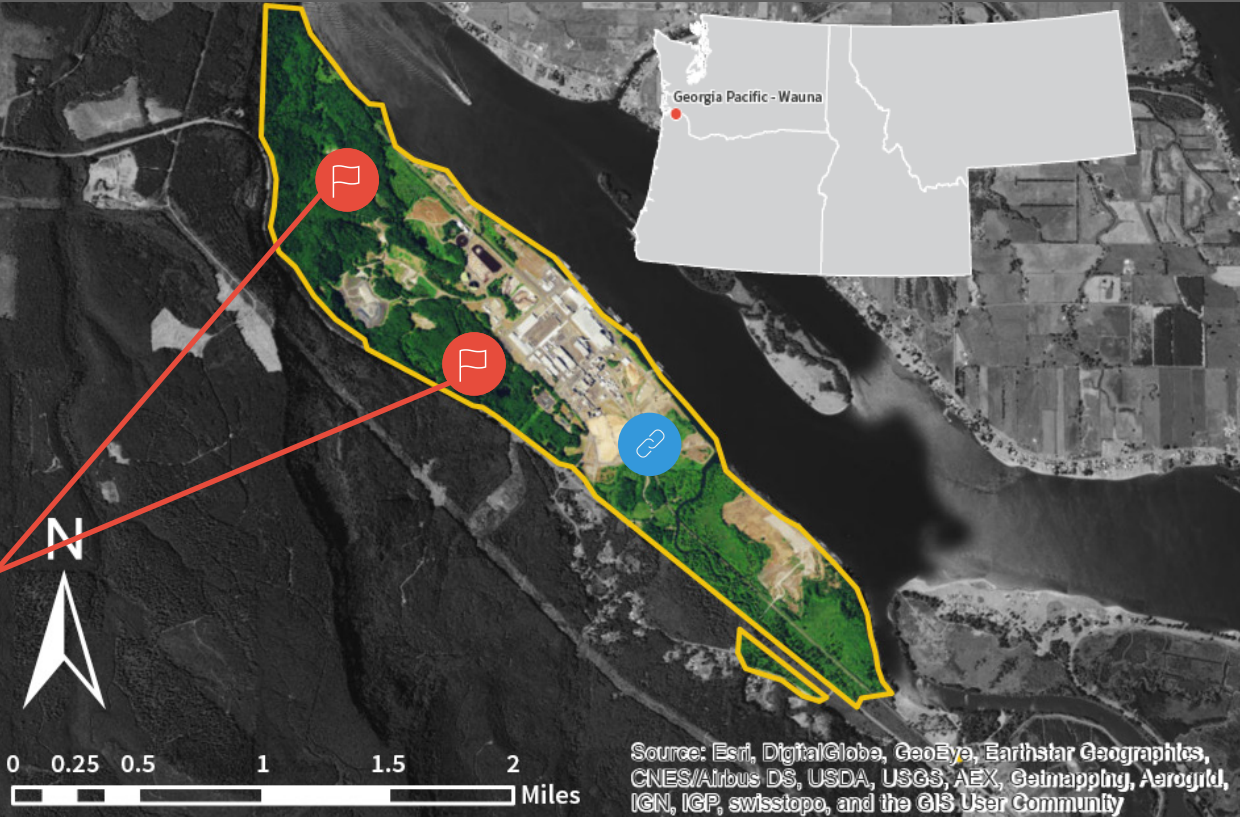
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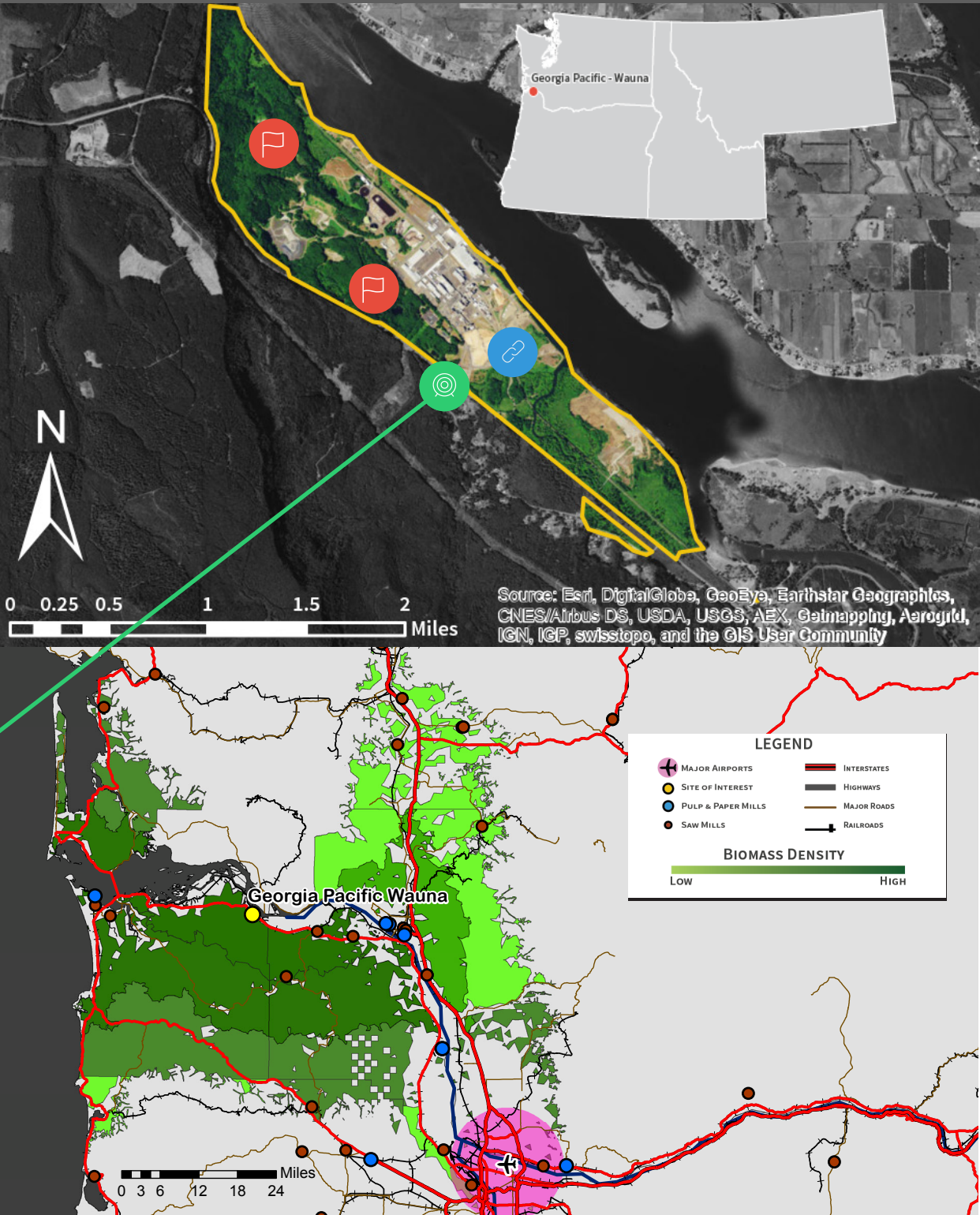
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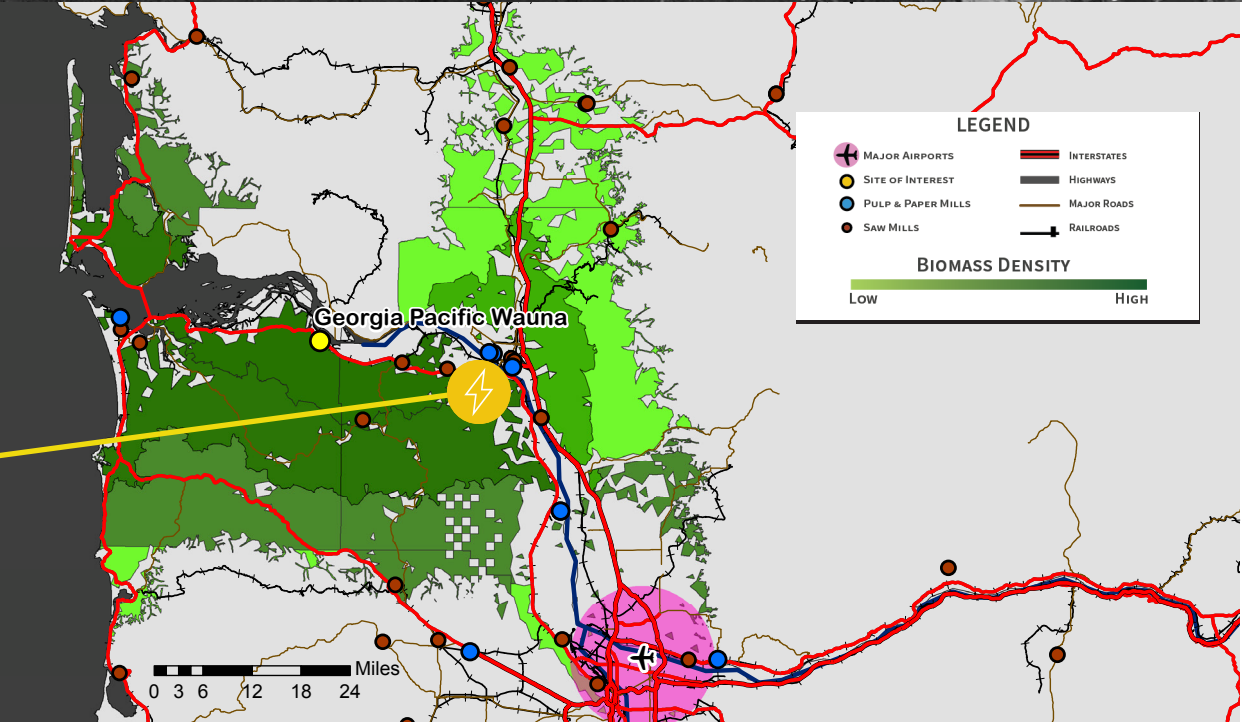
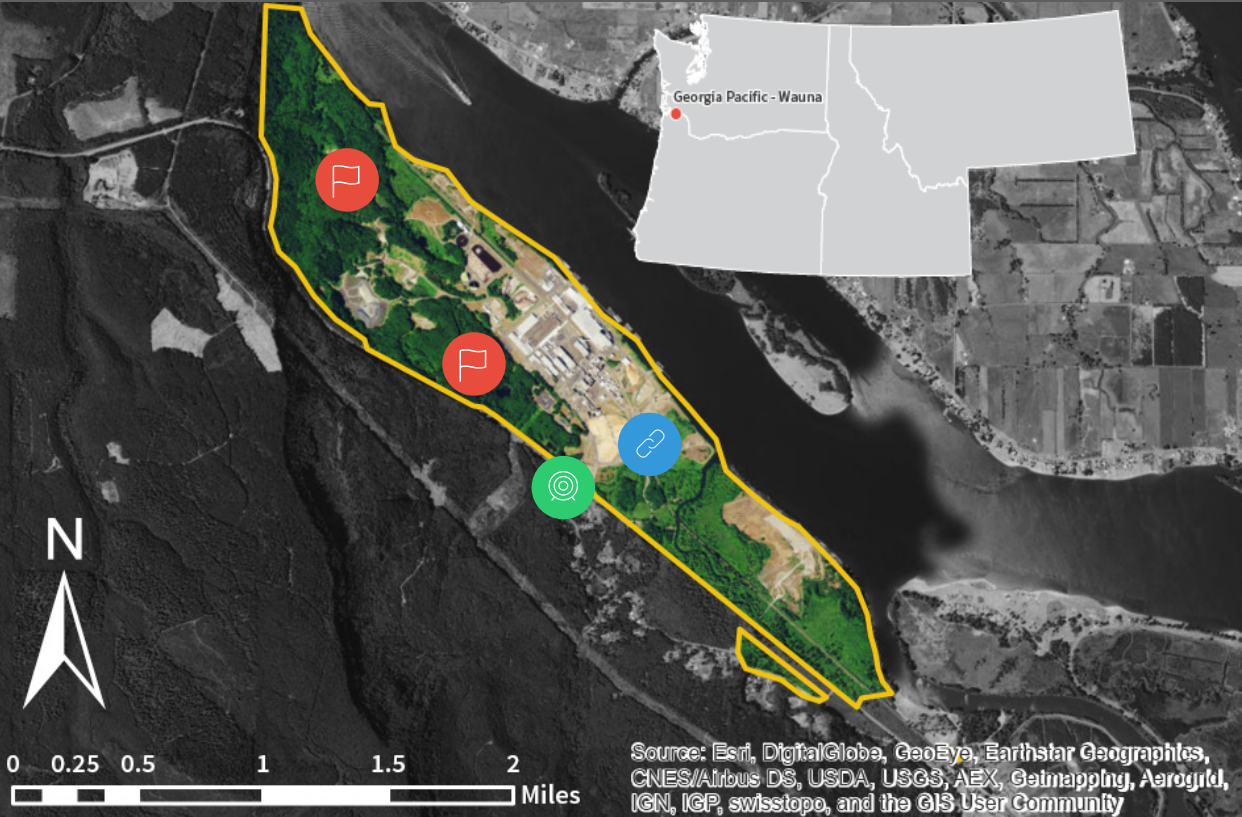
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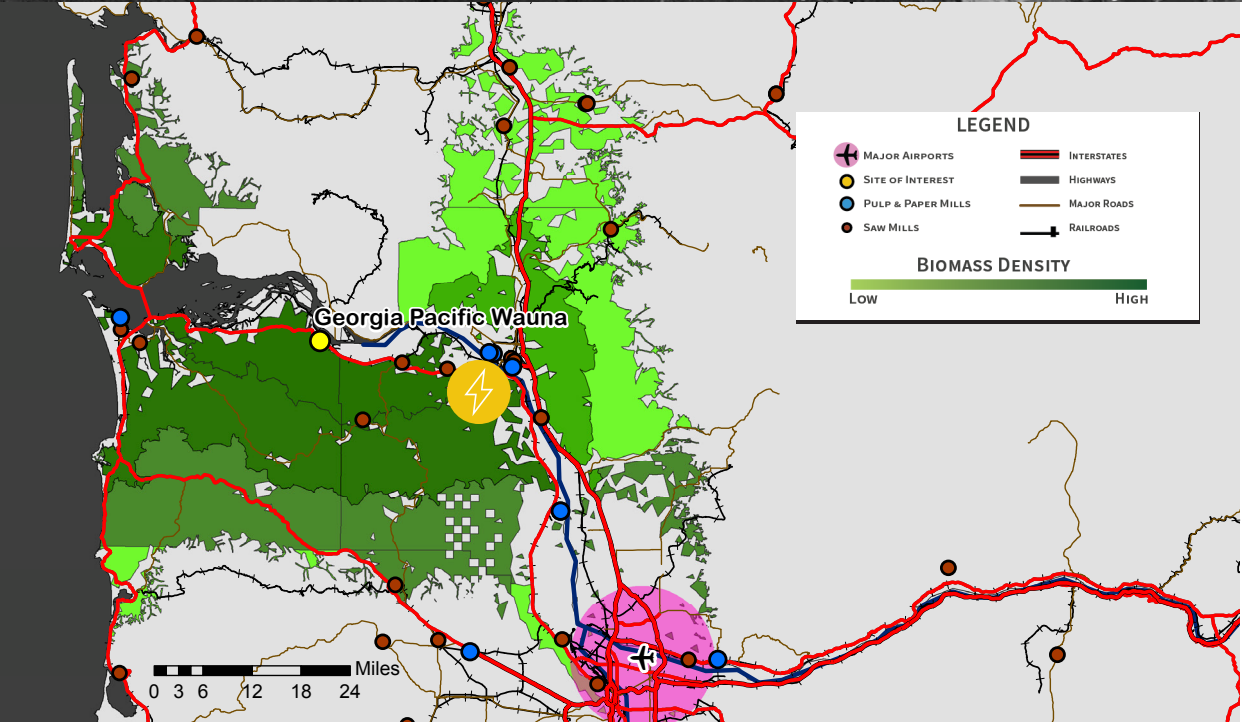
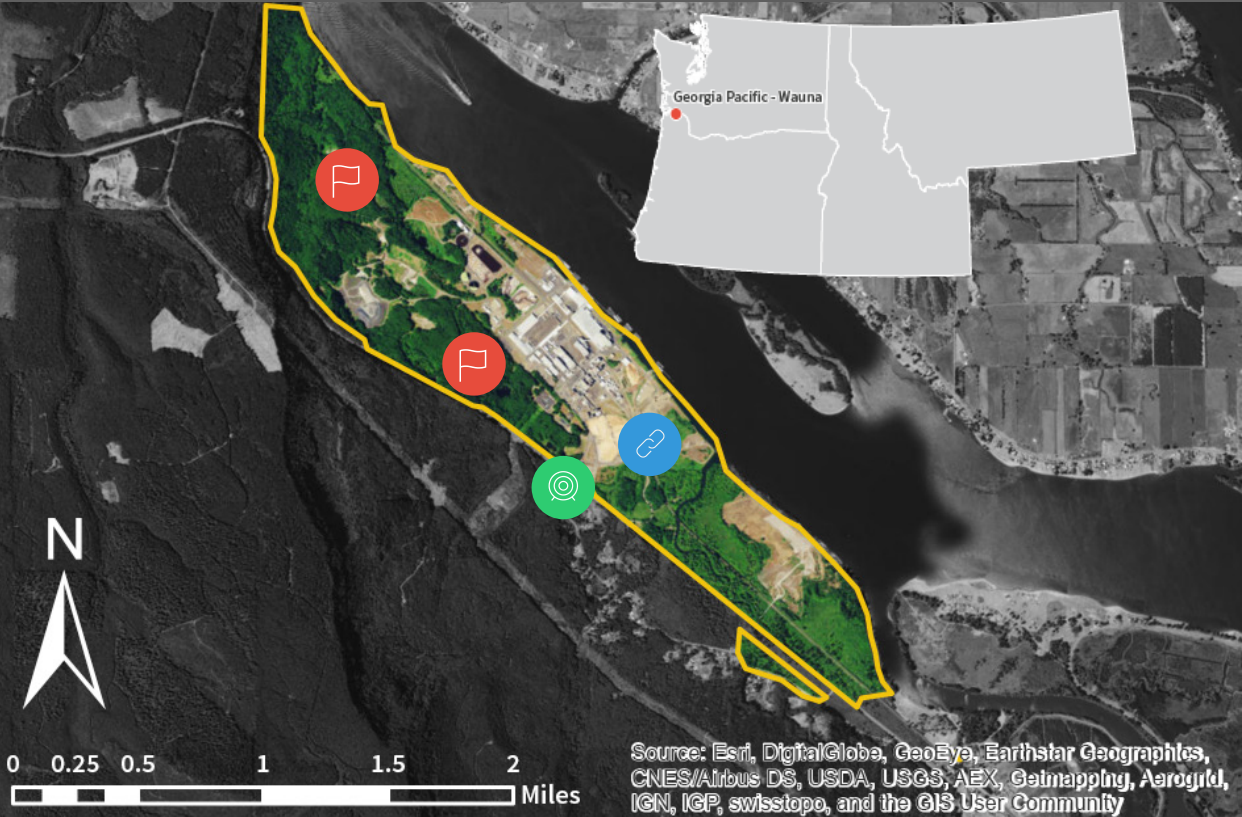
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WestRock Co. -Tacoma

TACOMA, PIERCE COUNTY, WA



STRENGTHS

- One of WestRock's two recently purchased mills on the West Coast.
- WestRock is a large company (Annual Revenue \$15b).

WEAKNESSES

- Location in large city, utilities are relatively expensive.
- Site is relatively small, space is limited for expansion
- Site has had several CWA and CAA violations in past.

OPPORTUNITIES

- Located on the Port of Tacoma with close access to barge, rail and truck.
- Professionals will be easier to recruit to urban facility.
- WestRock could be open to entrepreneurial ideas.

THREATS

- Limited room for growth, offsite expansion would be expensive.

SITE DESCRIPTION

- 162 Acres
- Kraft Process
- Products: Paper and Cardboard
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric \$0.0471/KwH
- Natural Gas \$0.30627/therm
- Co-gen boilers onsite - N

TRANSPORTATION

- Road Y 2 Miles
- Rail Y On Site
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- I-5 2 Miles

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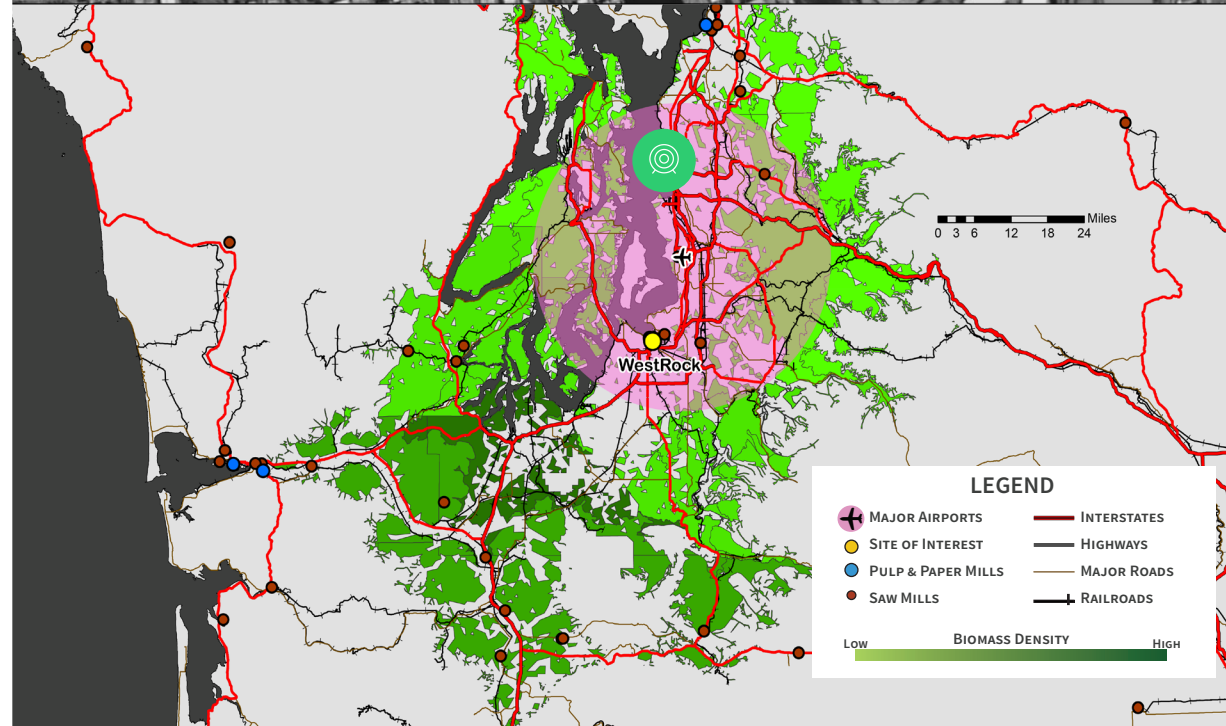
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- PDX: 145 Miles

BIOMASS QUANTITIES

- 30 Minutes: 14K BDT
- 60 Minutes: 135K BDT
- 90 Minutes: 370K BDT

INCENTIVES

- Close proximity to UW promotes visits by students and faculty.
- Refinery nearby



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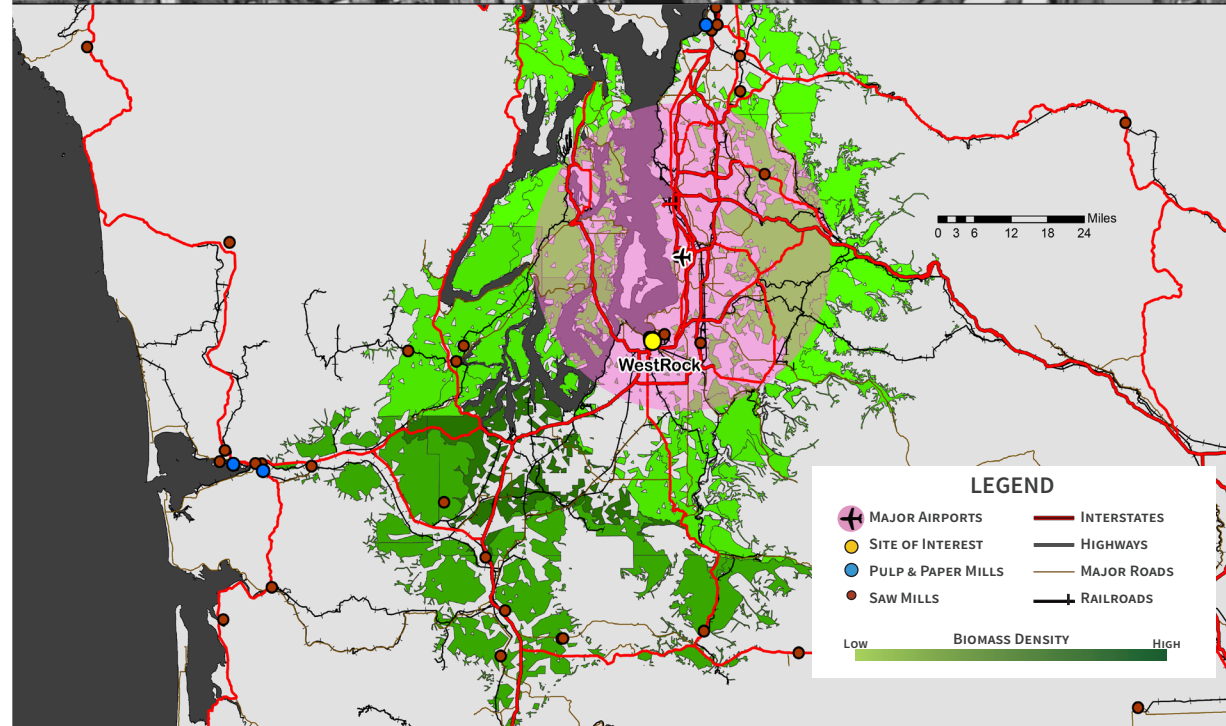
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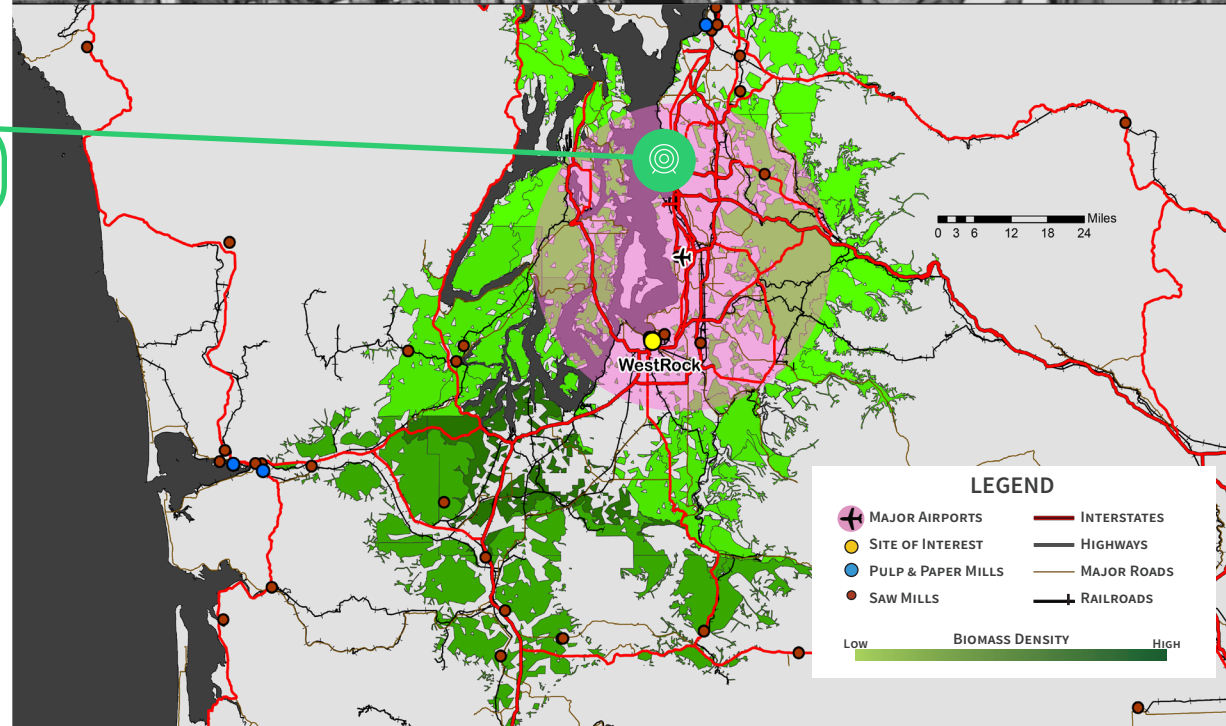
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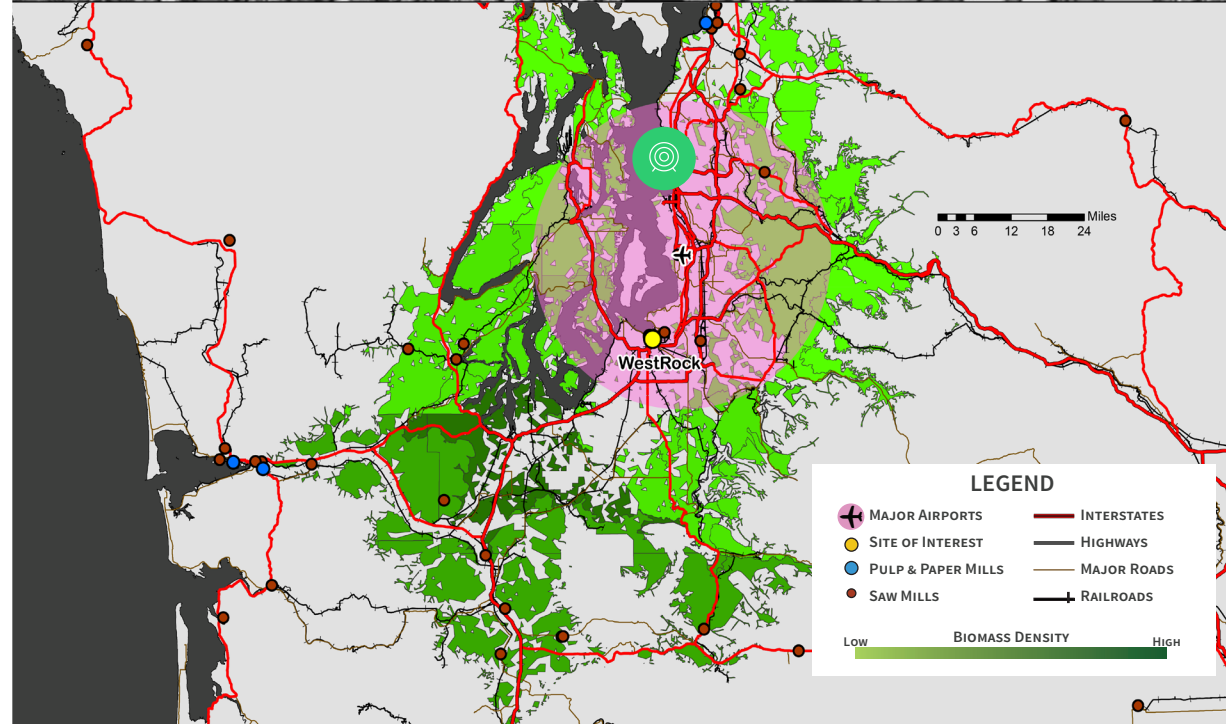
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Georgia Pacific - Camas

CAMAS, CLARK COUNTY, WA



STRENGTHS

- Approximately 350 acres of undeveloped Heavy Industrial zoned land
- Location in Portland/Vancouver Metro is a potential advantage for recruitment
- On-site solid waste landfill and wastewater treatment with a discharge of 20-35 MGD

WEAKNESSES

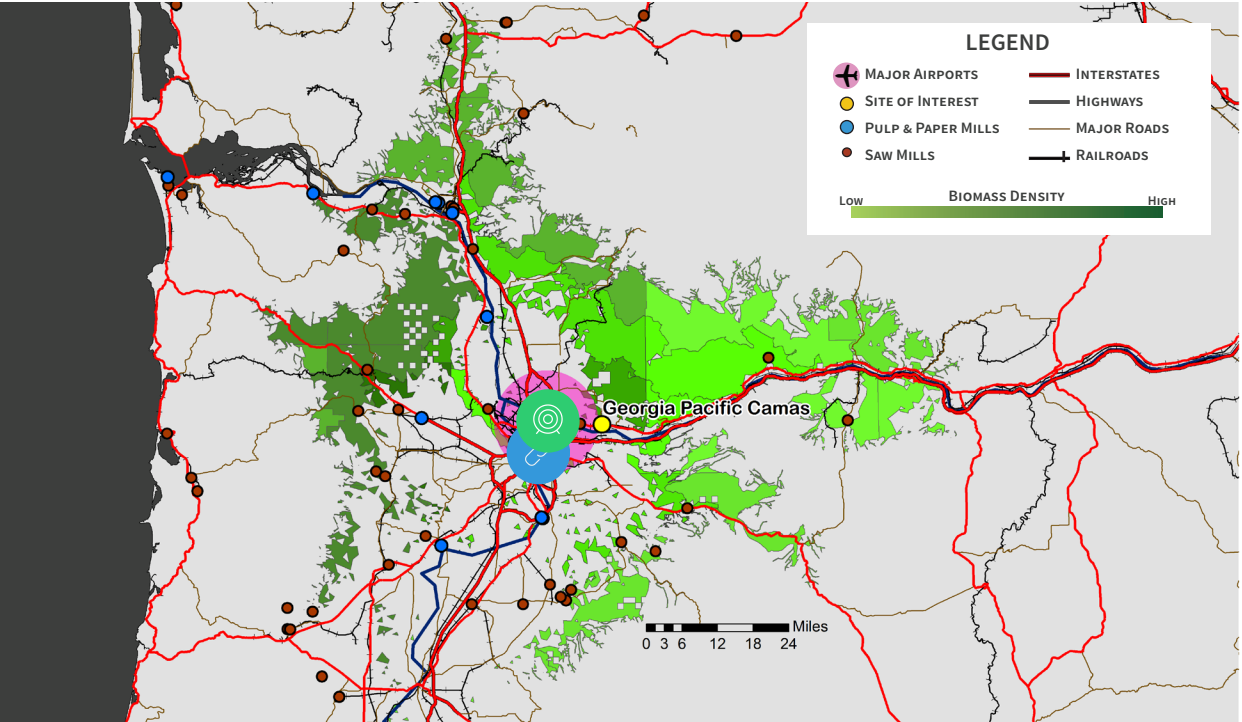
- Much of available Heavy Industrial zoned land is on difficult terrain or in high-visibility area
- Use of hog fuel boiler can compete with biofuel feedstock

OPPORTUNITIES

- 425,000 BDT of biomass available within 90 minutes of mill
- Close Proximity to Portland International Airport and Hillsboro Airport
- Highway, rail, and barge transportation
- On the Columbia River, 7 mi. to I-205, 14 mi. to I-5

THREATS

- Development on highly visible land could be resisted by community
- Changing regulatory climate (EPA regulations)



SITE DESCRIPTION

- 1,009 Acres
- Kraft Process
- Products: tissue, toweling, communication paper
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electricity: \$0.0642/KWh
- Natural Gas: \$0.50877/therm
- Co-gen boilers onsite - Y

TRANSPORTATION

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REGIONAL MARKET

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|-----------|-----------|
| • SEATAC: | 167 Miles |
| • PDX: | 12 Miles |

BIOMASS QUANTITIES

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| • 30 Minutes: | 15K BDT |
| • 60 Minutes: | 100K BDT |
| • 90 Minutes: | 425K BDT |

INCENTIVES

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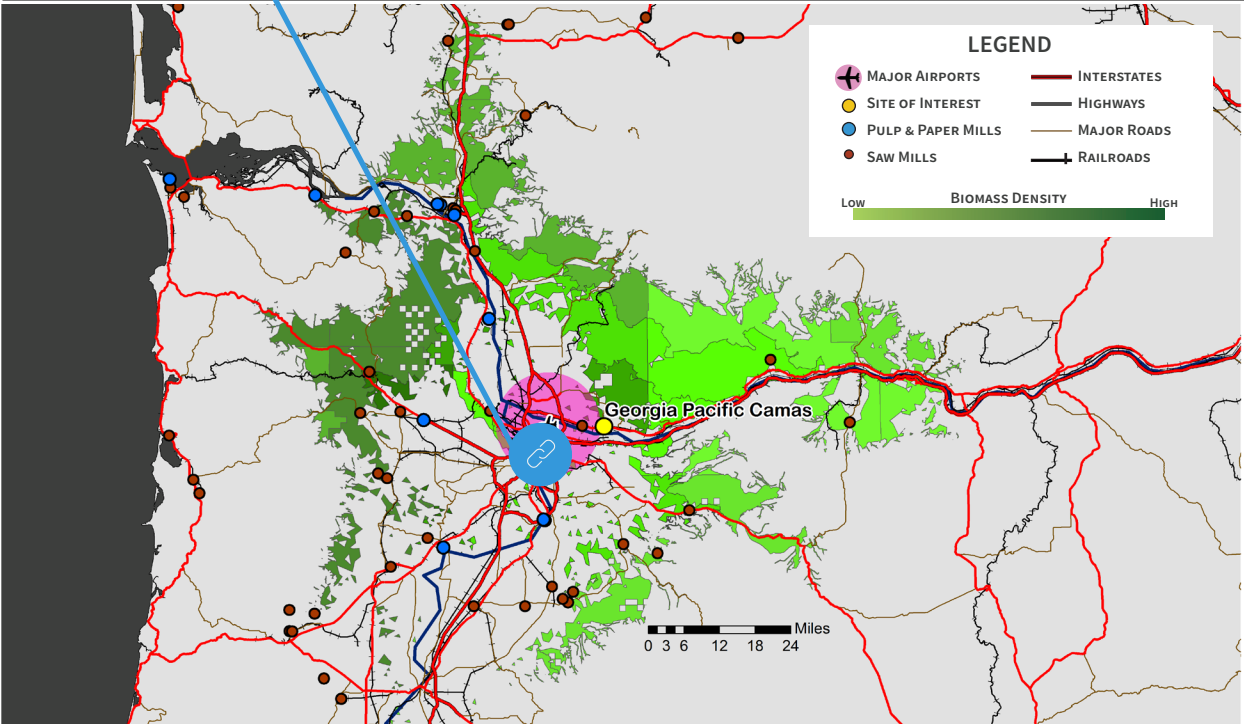
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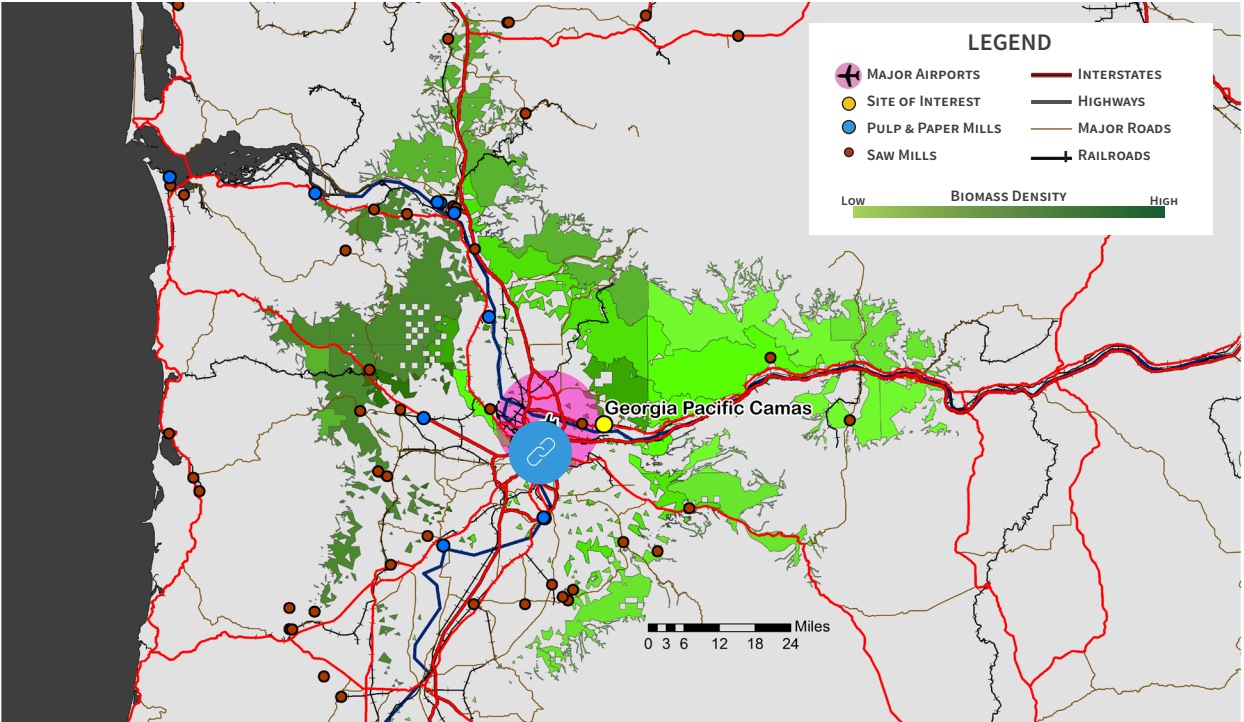
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- On-site solid waste landfill and wastewater treatment with a discharge of 20-35 MGD

WEAKNESSES

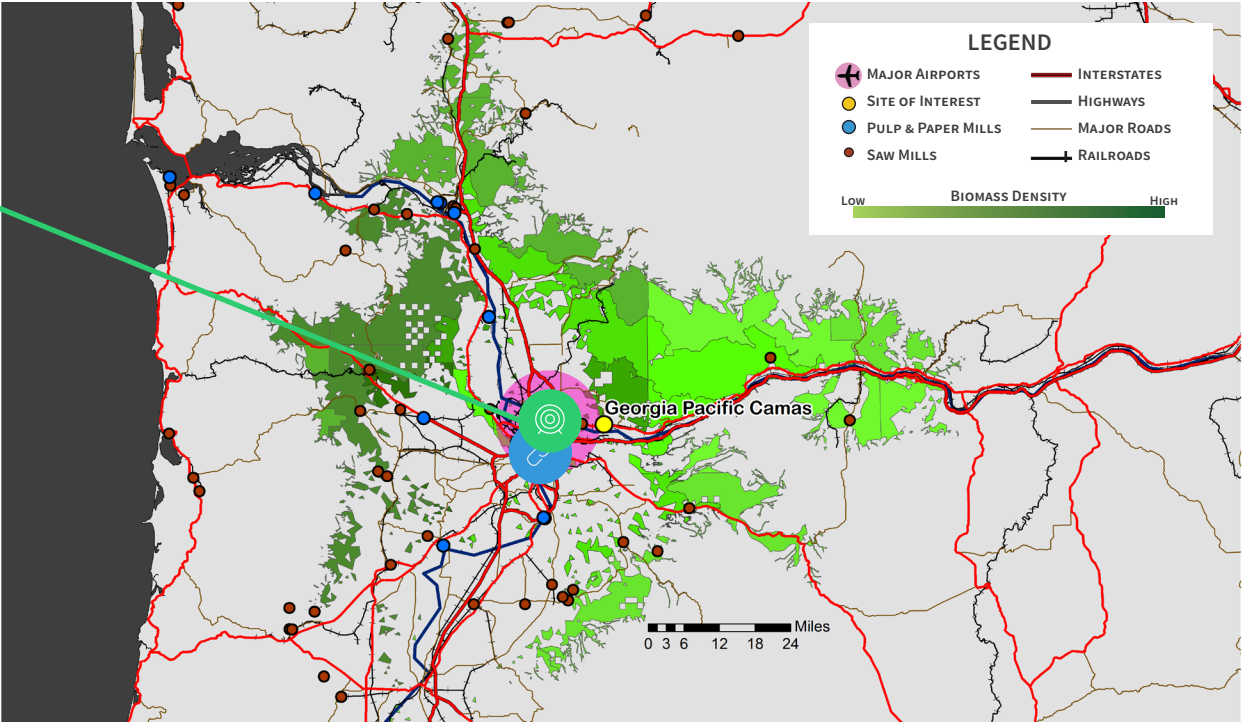
- Much of available Heavy Industrial zoned land is on difficult terrain or in high-visibility area
- Use of hog fuel boiler can compete with biofuel feedstock

OPPORTUNITIES

- 425,000 BDT of biomass available within 90 minutes of mill
- Close Proximity to Portland International Airport and Hillsboro Airport
- Highway, rail, and barge transportation
- On the Columbia River, 7 mi. to I-205, 14 mi. to I-5

THREATS

- Development on highly visible land could be resisted by community
- Changing regulatory climate (EPA regulations)



SITE DESCRIPTION

- 1,009 Acres
- Kraft Process
- Products: tissue, toweling, communication paper
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electricity: \$0.0642/KWh
- Natural Gas: \$0.50877/therm
- Co-gen boilers onsite - Y

TRANSPORTATION

- | | | |
|---------|---|----------|
| • Road | Y | On-Site |
| • Rail | Y | On-Site |
| • Barge | Y | On-Site |
| • I-5 | | 14 Miles |

REGIONAL MARKET

- SEATAC: 167 Miles
- PDX: 12 Miles

BIOMASS QUANTITIES

- 30 Minutes: 15K BDT
- 60 Minutes: 100K BDT
- 90 Minutes: 425K BDT

INCENTIVES

- WA State Biofuels Production Tax Incentives

Georgia Pacific - Camas

CAMAS, CLARK COUNTY, WA



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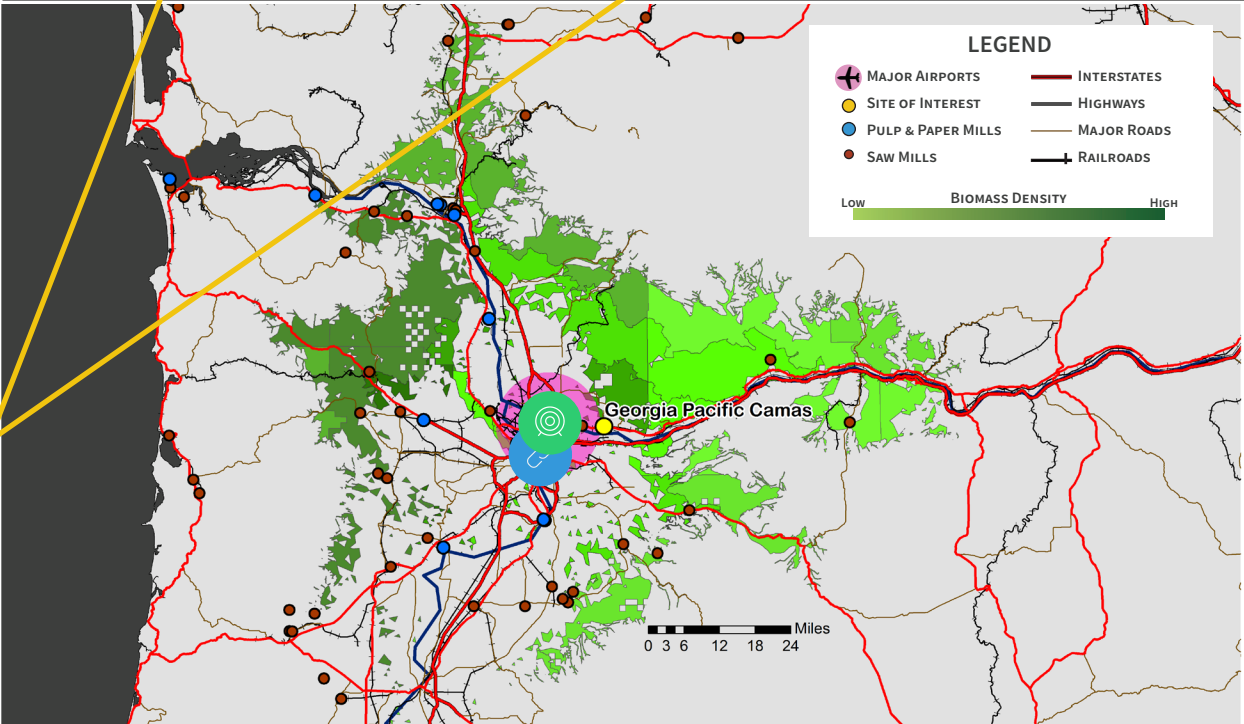
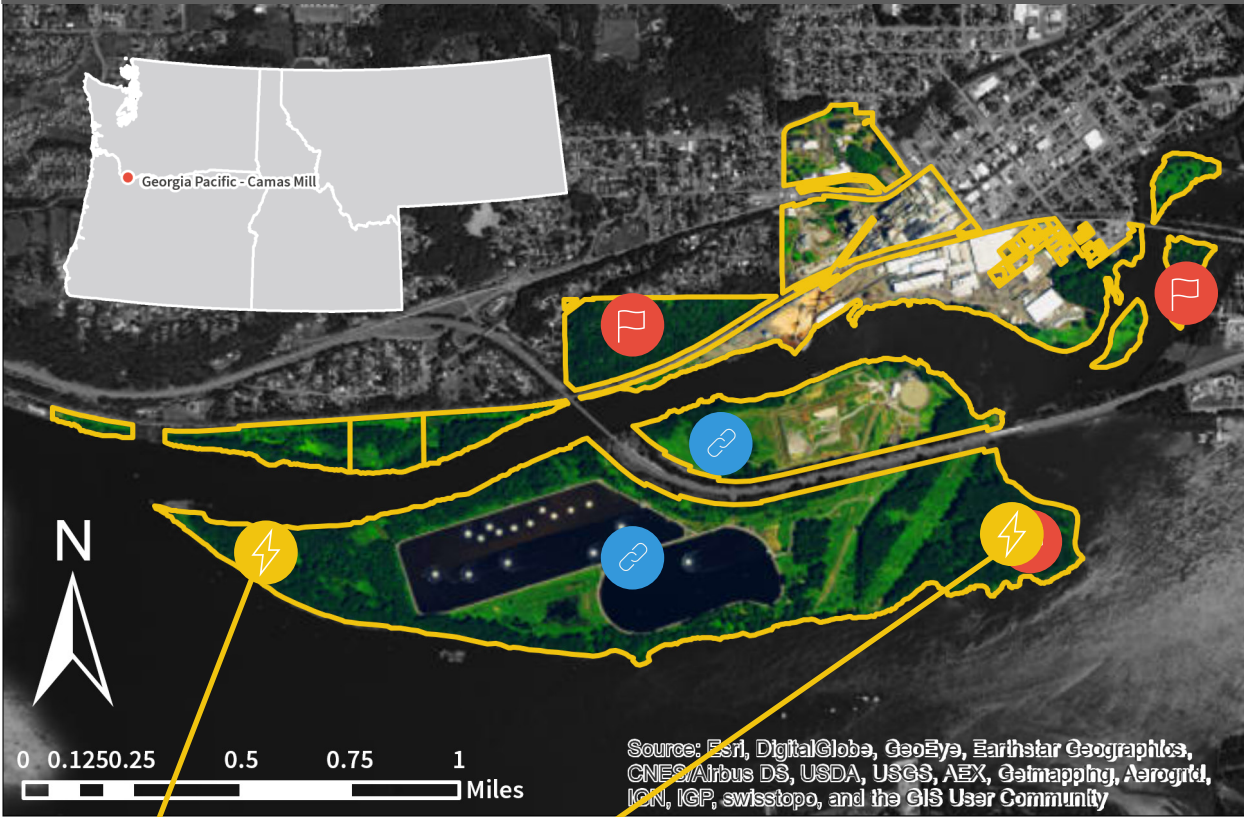
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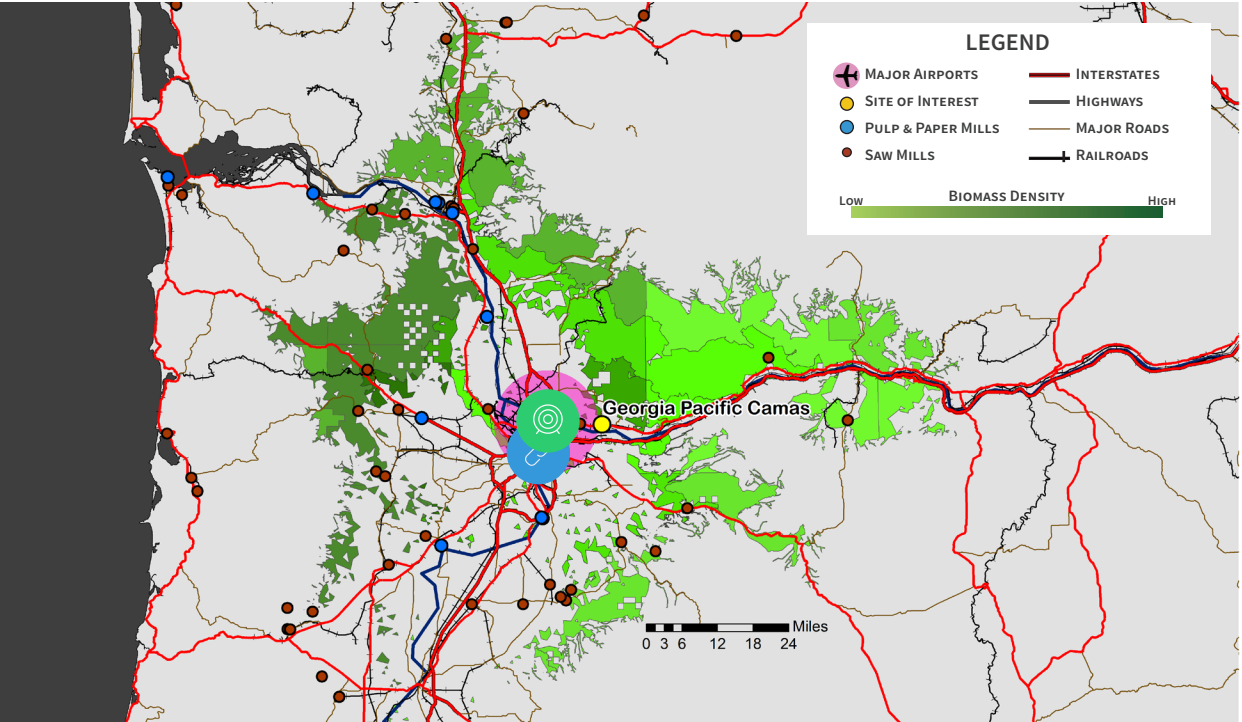
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STRENGTHS

- Multiple green fields on site (larger targeted one having 94.3 acres)
- Kraft and mild sulfate mill
- Located on the Port of Toledo
- Land is zoned for Heavy Industry

WEAKNESSES

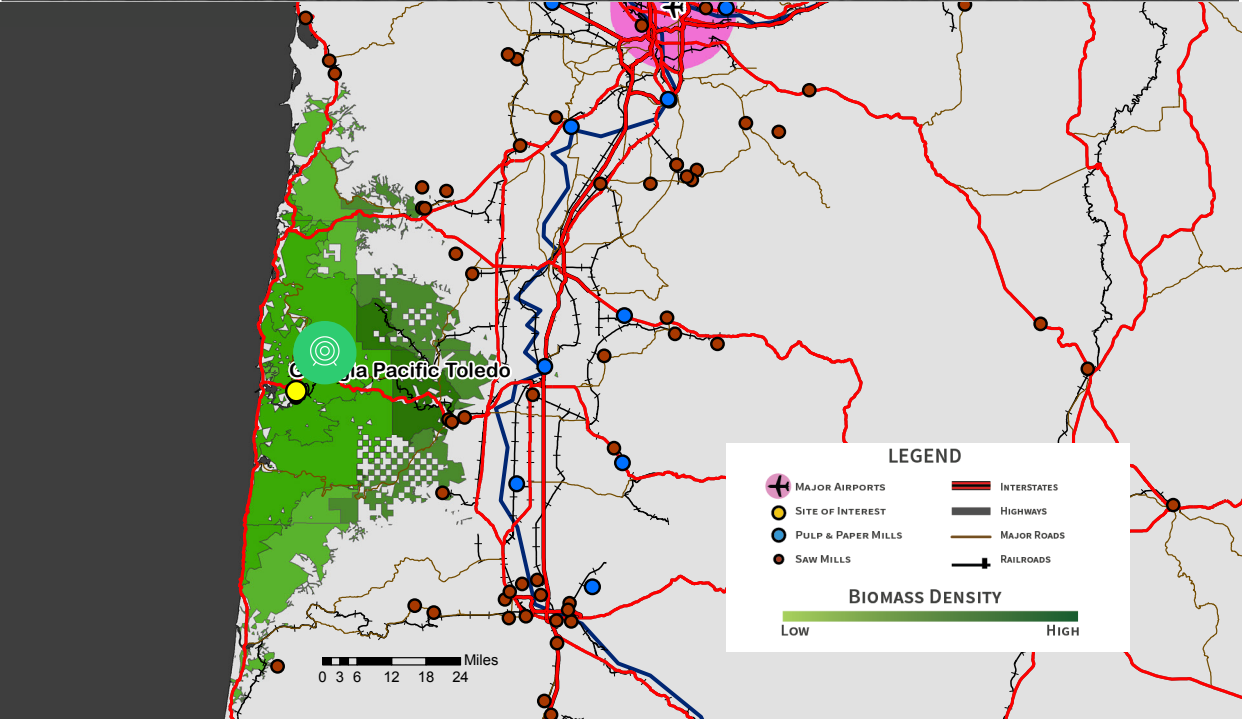
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OPPORTUNITIES

- Located adjacent to the Port of Toledo and also existing rail line access on site
- Only 5 miles away highway 20
- Biofuel property tax exemptions (OR)
- Biofuel tax incentives (OR)
- Biomass availability of 340,00 BDT within 90 minutes of mill

THREATS

- Strained relations with town of Toledo (2006 petition to remove air permit was made)
- Getting talented engineers to relocate to rural area may be a challenge



SITE DESCRIPTION

- 458 Acres
- Kraft & NSSC
- Products: Pulp & Paper
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric Name & \$0.0523/KwH
- Natural Gas Name & \$0.5087/unit
- Boiler - Natural gas/ 66 MW

TRANSPORTATION

- | | | |
|---------|---|----------|
| • Road | Y | 1 Mile |
| • Rail | Y | On Site |
| • Barge | Y | On Site |
| • I-5 | | 58 Miles |

REGIONAL MARKET

- | | |
|-----------|-----------|
| • SEATAC: | 292 Miles |
| • PDX: | 144 Miles |

BIOMASS QUANTITIES

- | | |
|---------------|----------|
| • 30 Minutes: | 37K BDT |
| • 60 Minutes: | 175K BDT |
| • 90 Minutes: | 340K BDT |

INCENTIVES

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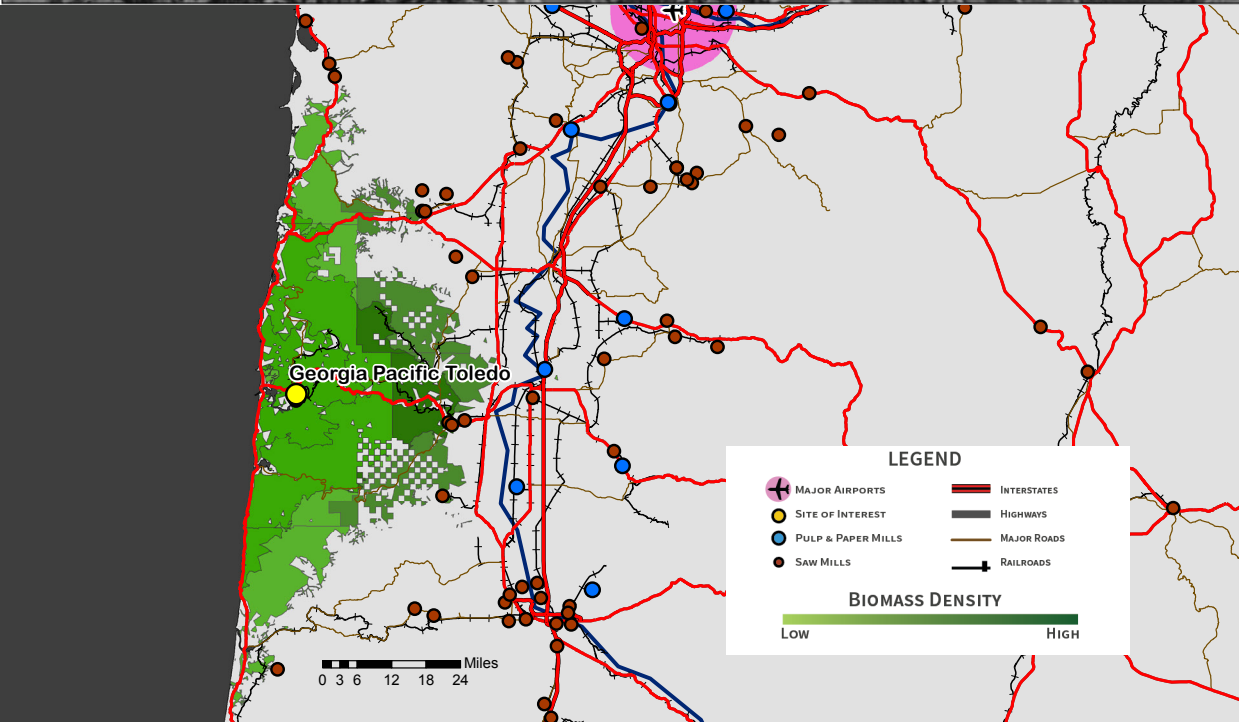
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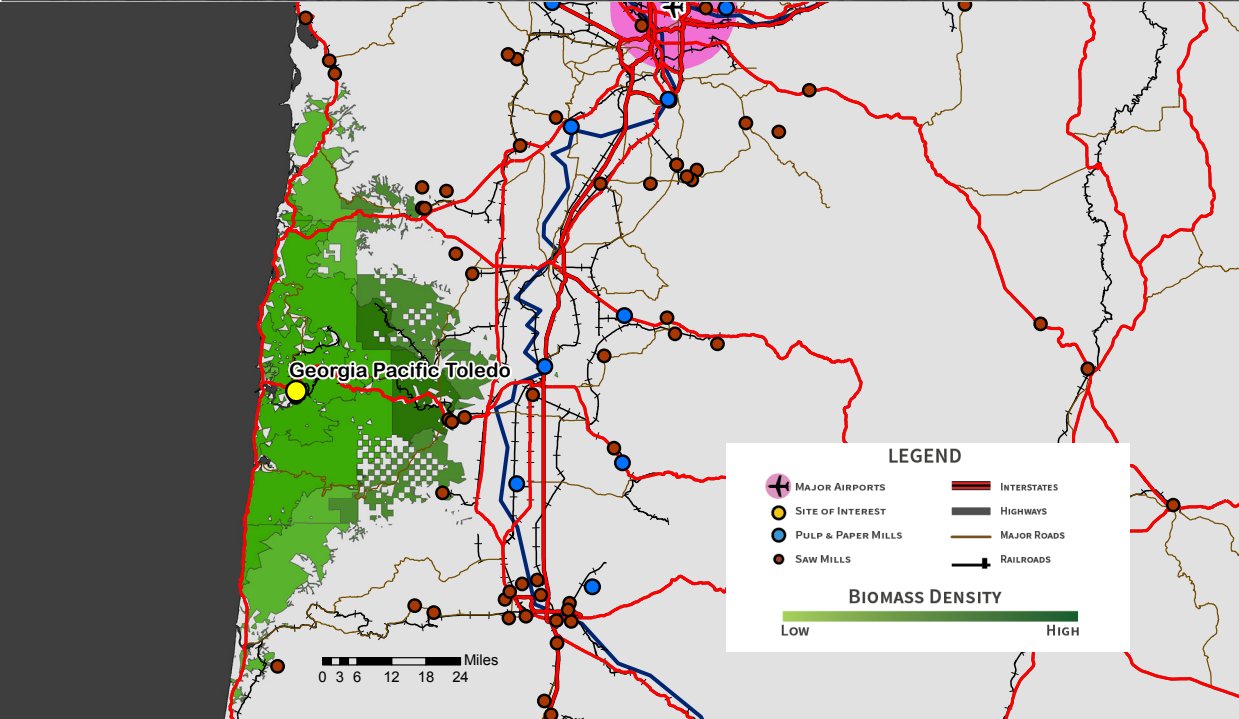
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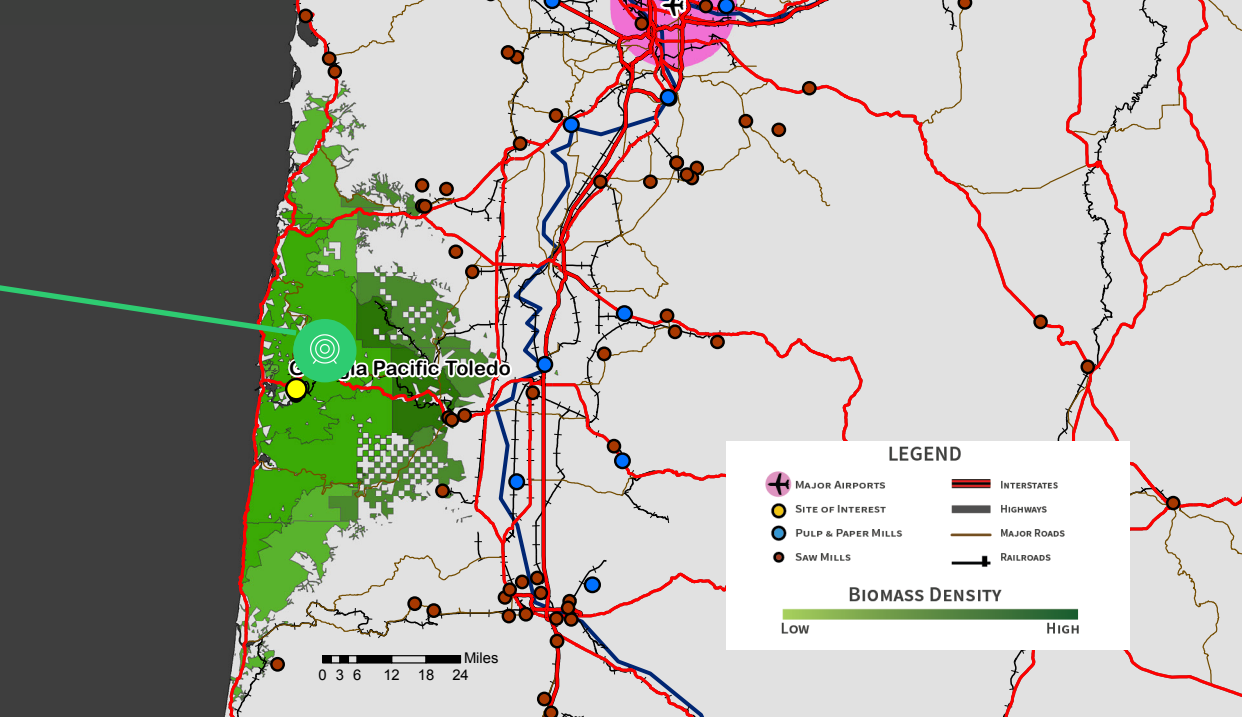
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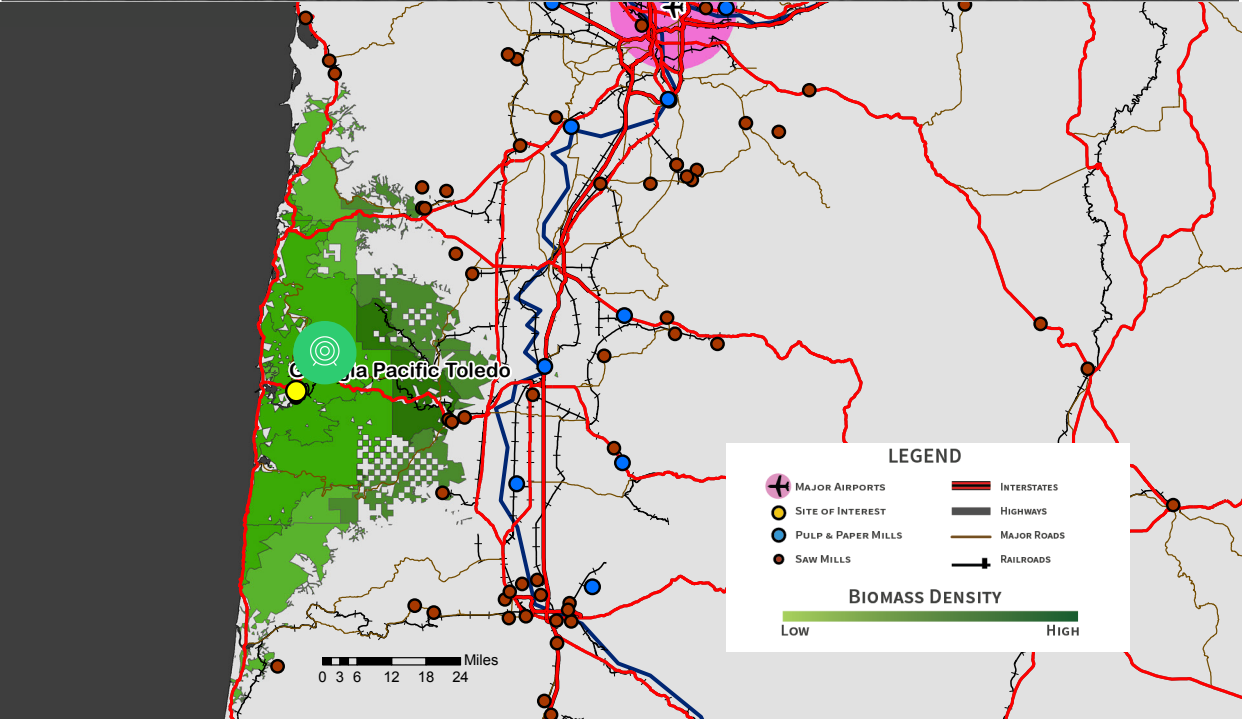
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Cosmo Specialty Fibers

COSMOPOLIS, GRAYS HARBOR COUNTY, WA



STRENGTHS

- Existing equipment uses Sulphites, could potentially be compatible with Calcium Bisulphite
- 420 acres available for expansion
- Has shown a interest in investigating entrepreneurial ideas.

WEAKNESSES

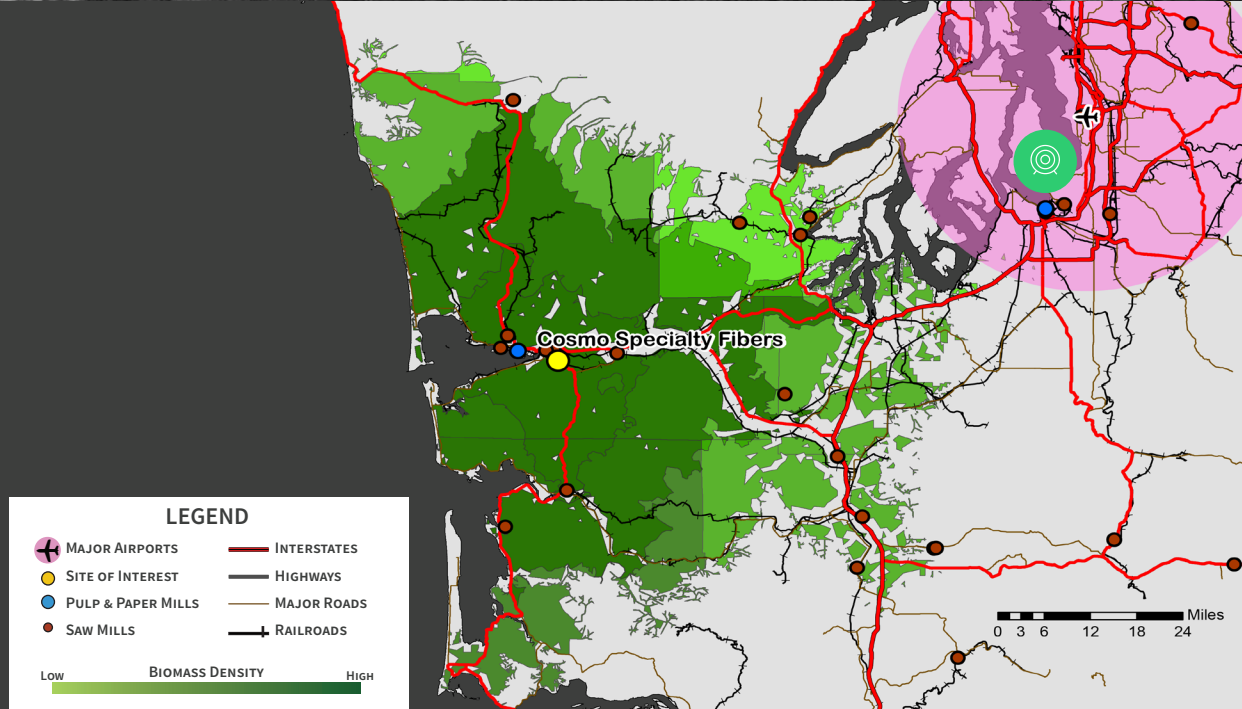
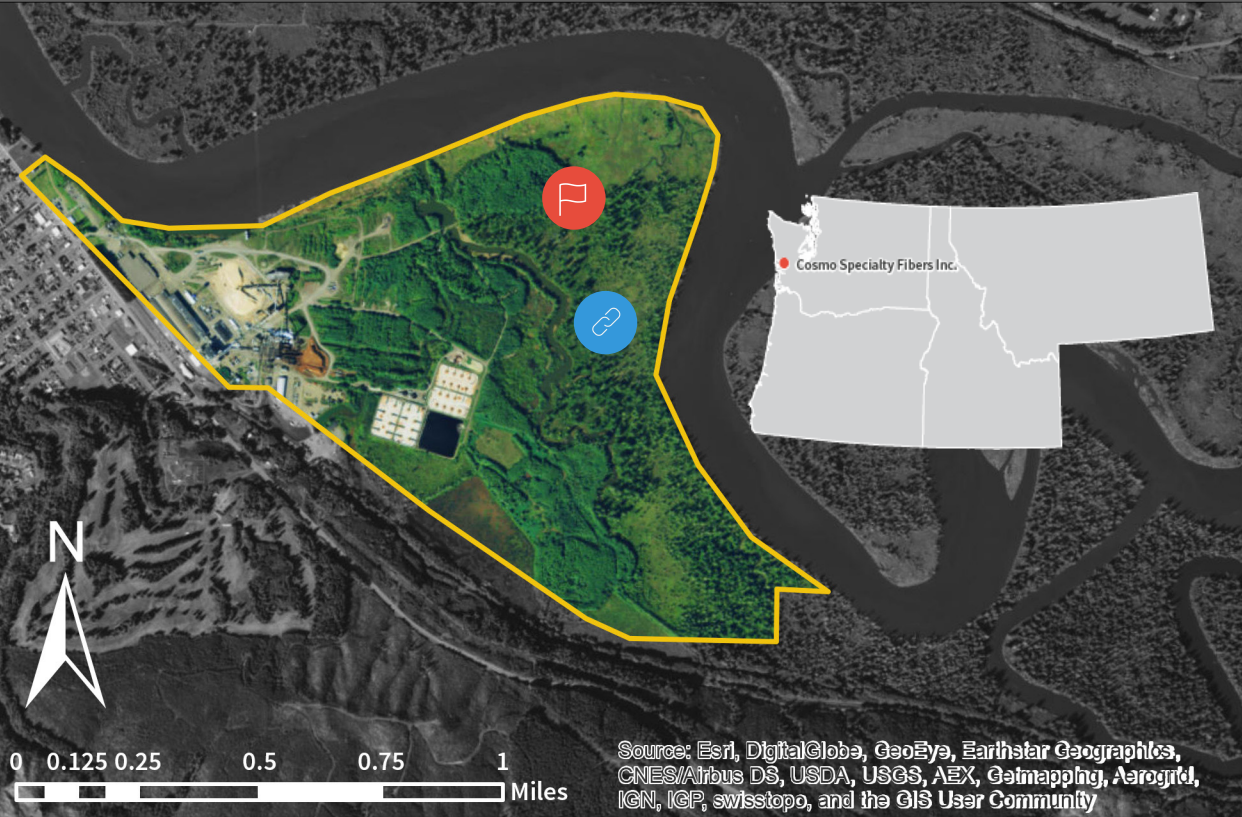
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- Currently does not process more than one species of tree (hemlock)
- Majority of property , including the existing facility, is in the FEMA Floodplain

OPPORTUNITIES

- Weyerhaeuser owns a nearby log yard, with port access
- 578,000 BDT of biomass available with 90 minutes
- Nearest potential competition is WestRock Tacoma (79 miles)

THREATS

- New Industry has repeatedly faced resistance from local organizations
- It may be challenging to recruit qualified professionals to rural location



SITE DESCRIPTION

- 587 Acres
- Magnesium Sulfite
- Products: Paper
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric \$0.0471/KwH
- Natural Gas N/A
- Co-gen boilers onsite - Y

TRANSPORTATION

- Road Y 1 Miles
- Rail N
- Barge N
- I-5 50 Miles

REGIONAL MARKET

- SEATAC: 97 Miles
- PDX: 143 Miles

BIOMASS QUANTITIES

- 30 Minutes: 80K BDT
- 60 Minutes: 338K BDT
- 90 Minutes: 578K BDT

INCENTIVES

- Cosmo is a NARA Project Partner
- New Market Tax Incentive

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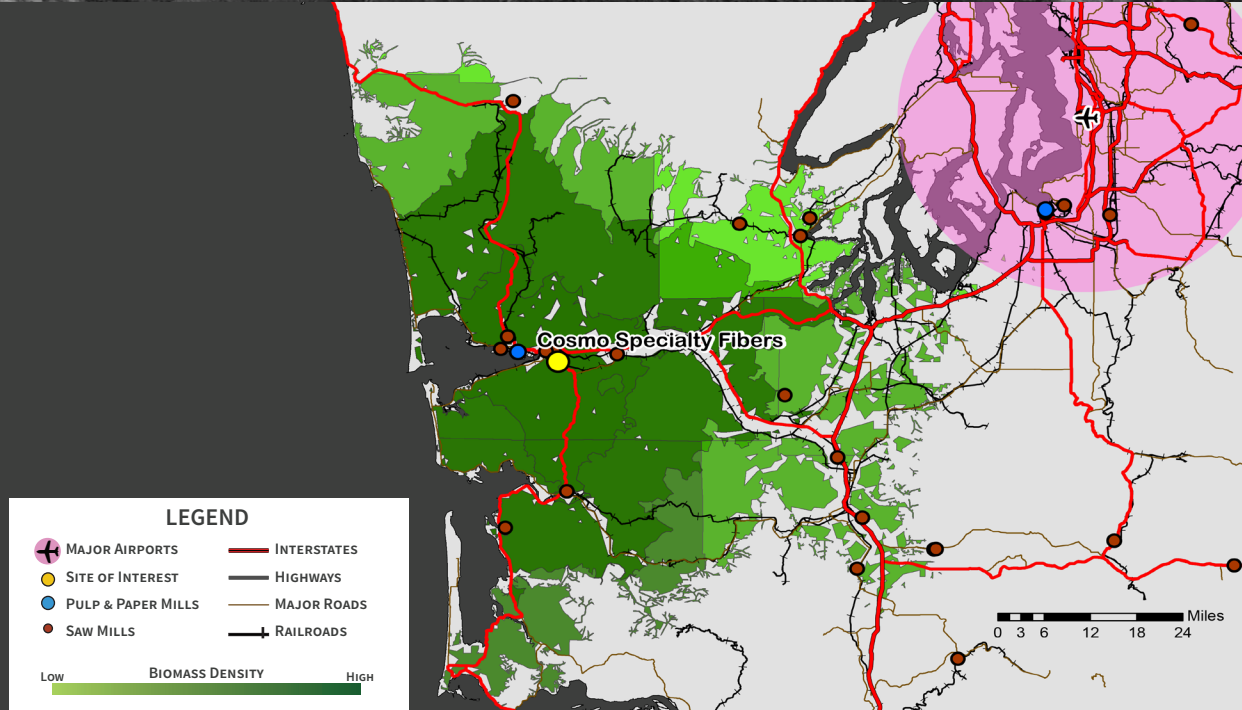
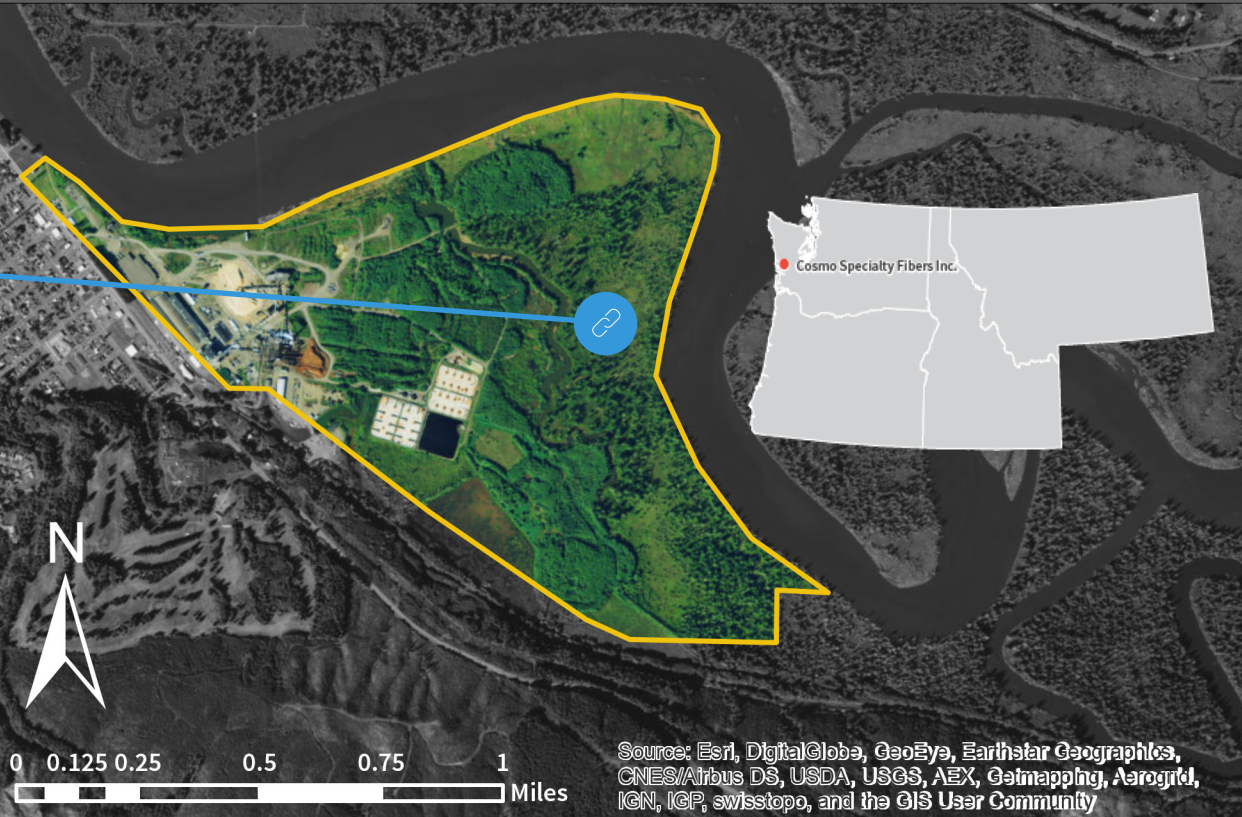
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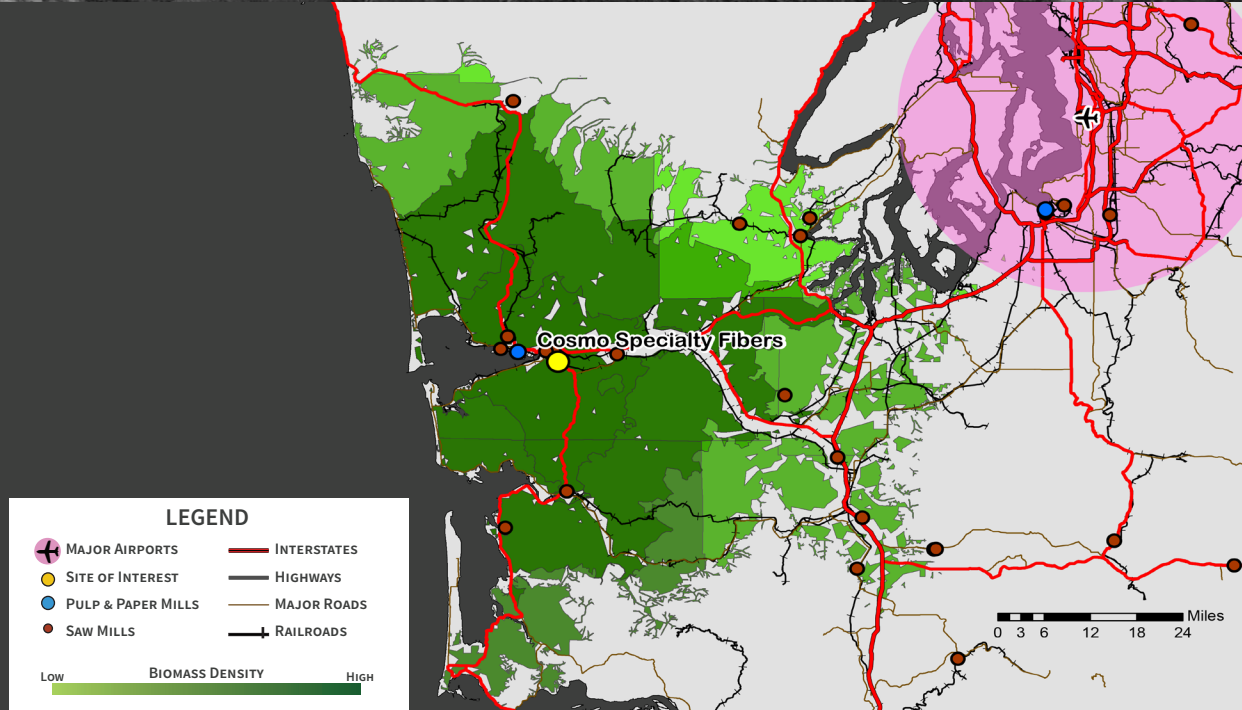
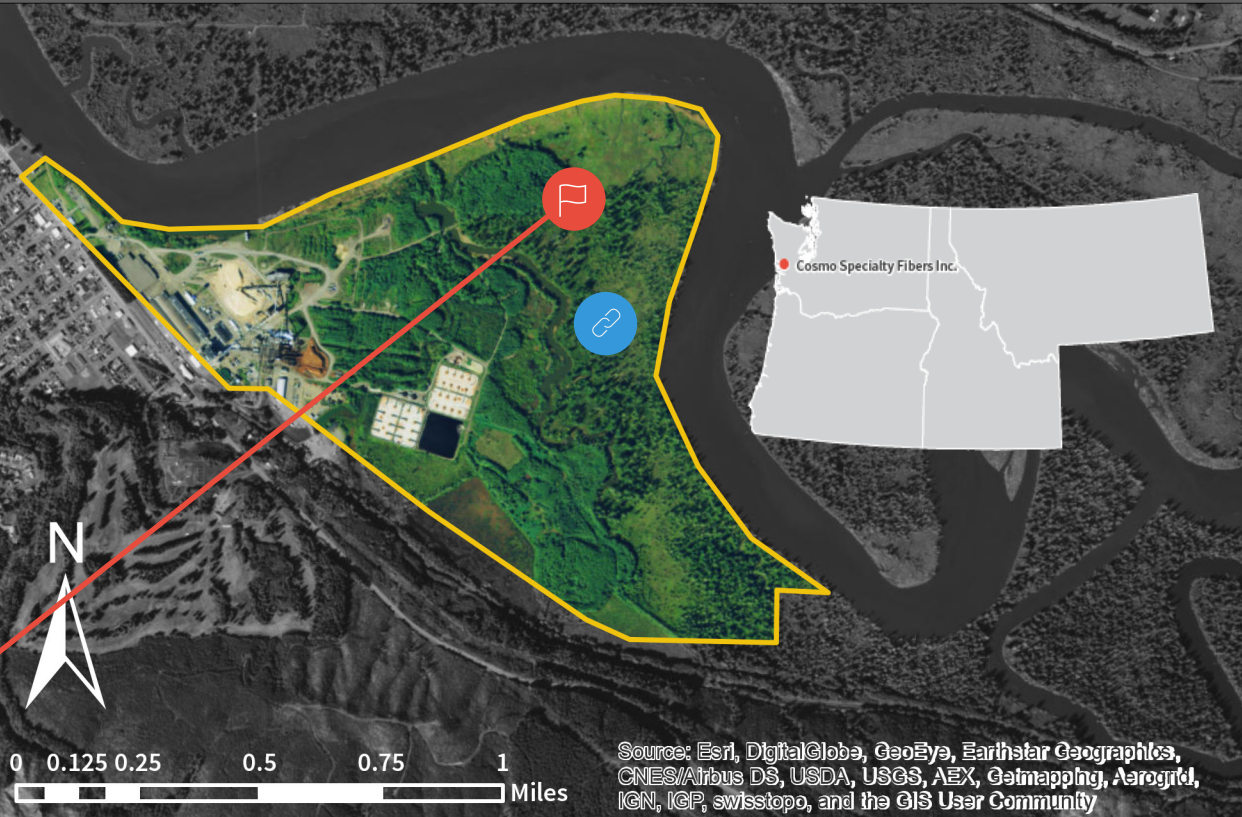
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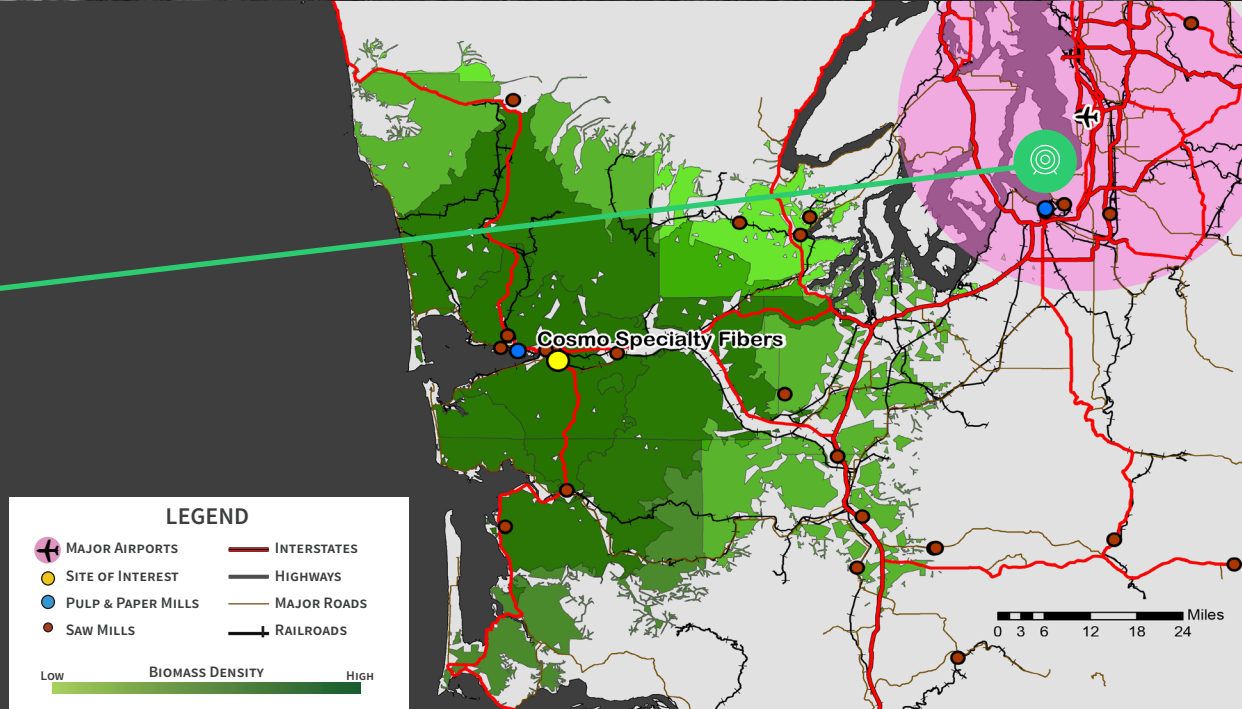
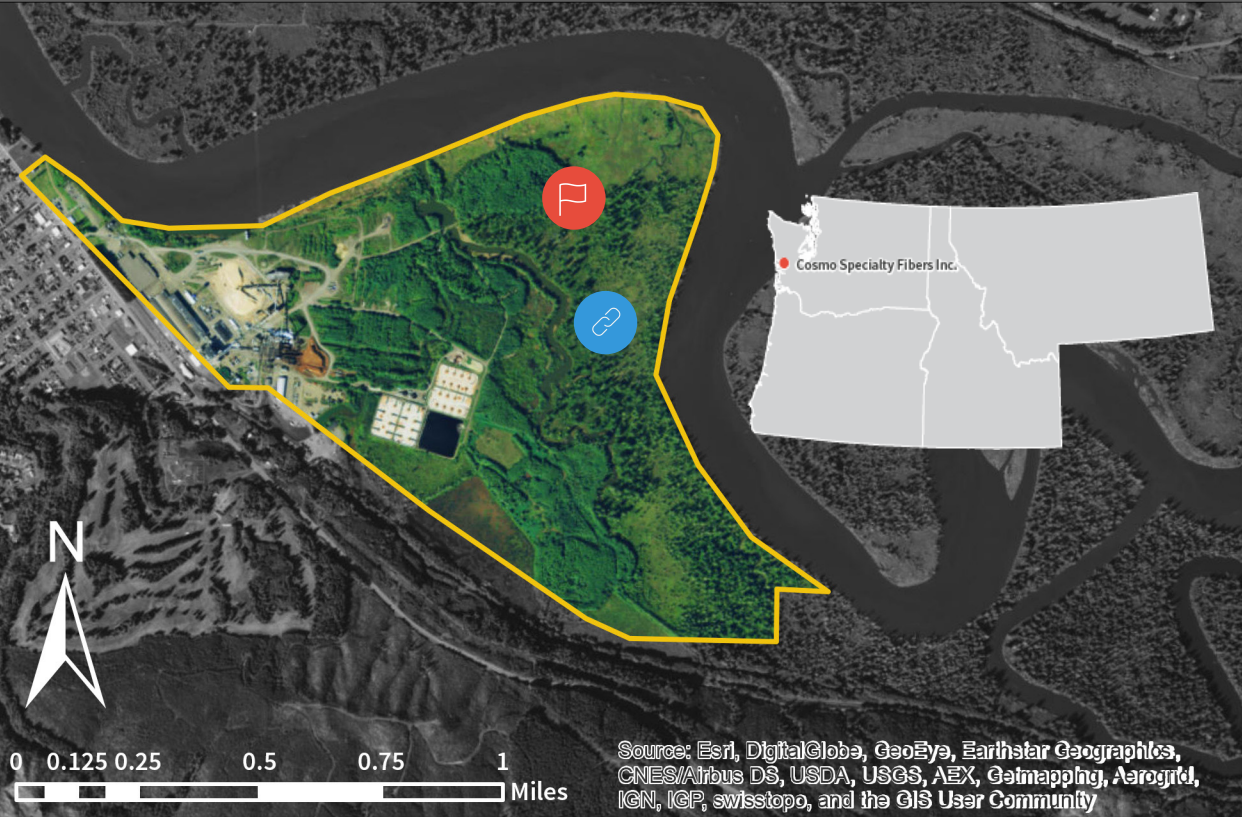
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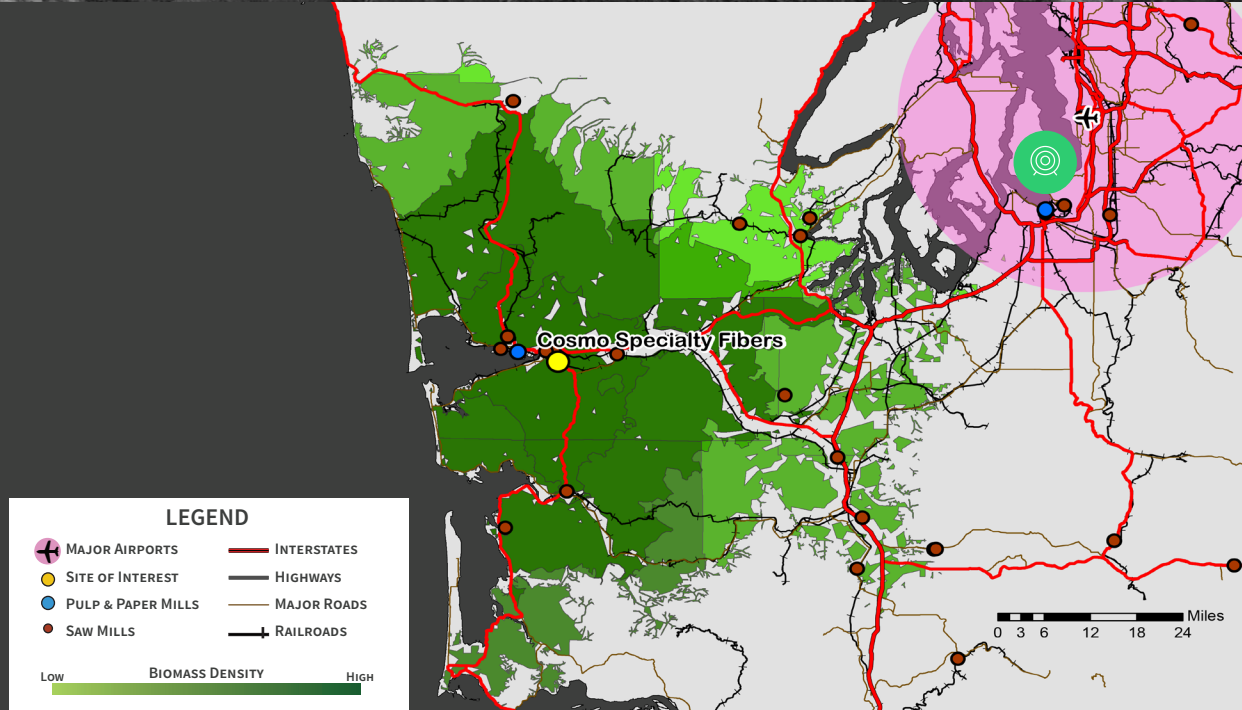
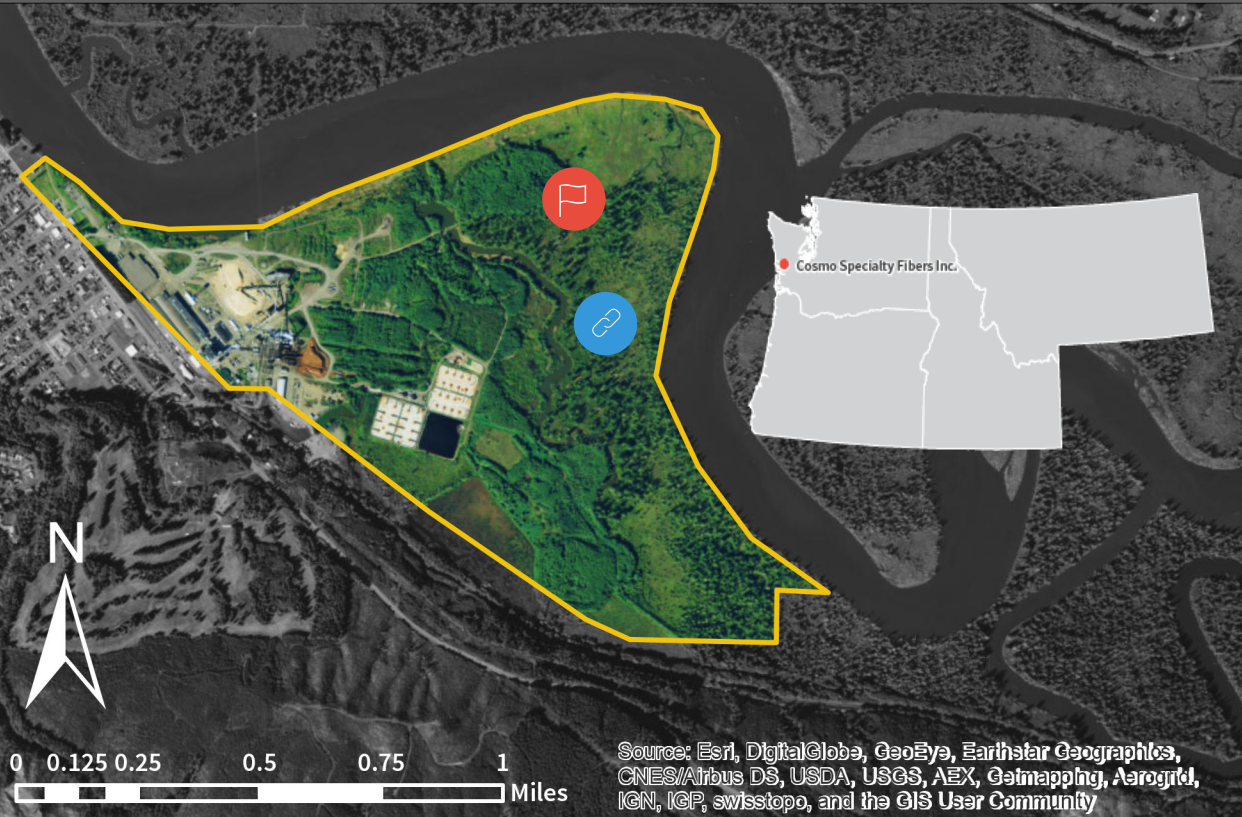
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INCENTIVES

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STRENGTHS

- Small portion of greyfield that can be re-purposed for pilot facility (26 acres)
- Located on the Columbia river
- Only 6 miles to I5 and has existing rail lines on site

WEAKNESSES

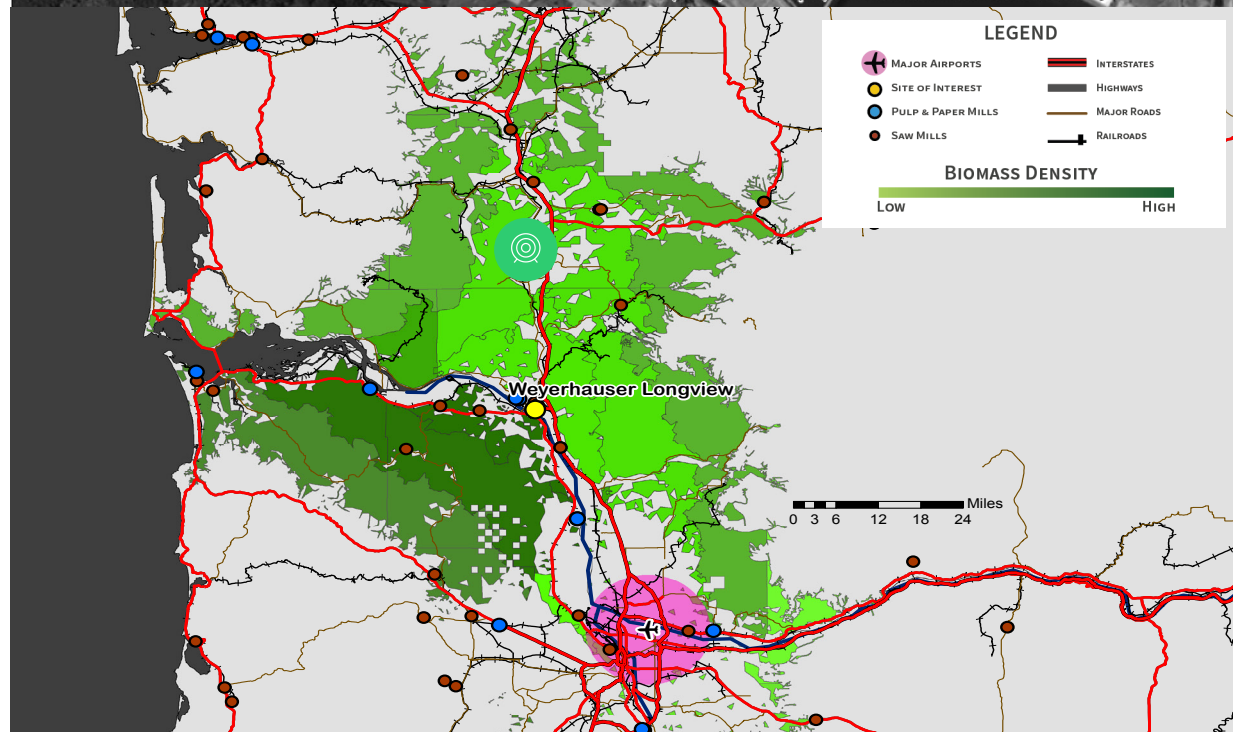
- Crowded site with very little room for full plant expansion
- No greenfields within direct proximity to site to develop that are owned by Weyerhaeuser

OPPORTUNITIES

- Located adjacent to the Columbia River and also existing rail line access on site
- Only 5 miles away I5
- Only 54 mile to PDX
- Biomass availability of 740,000 BDT within 90 minutes of mill

THREATS

- Competition for space and power with Norpac venture neighboring proposed grey field site.
- Competition for Biomass with neighboring mills in the area. (Kapstone and GP Camas)



SITE DESCRIPTION

- 687 Acres
- Kraft
- Products: Paper
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric Name & \$0.0382/KwH
- Natural Gas Name & \$0.45782/unit
- Boiler - Wood/44 MW

TRANSPORTATION

- | | | |
|---------|---|---------|
| • Road | Y | 6 Miles |
| • Rail | Y | On Site |
| • Barge | Y | On Site |
| • I-5 | | 6 miles |

REGIONAL MARKET

- SEATAC: 116 Miles
- PDX: 54 Miles

BIOMASS QUANTITIES

- 30 Minutes: 60K BDT
- 60 Minutes: 340K BDT
- 90 Minutes: 760K BDT

INCENTIVES

- WA State Biofuels Production Tax Incentives



STRENGTHS

- Small portion of greyfield that can be re-purposed for pilot facility (26 acres)
- Located on the Columbia river
- Only 6 miles to I5 and has existing rail lines on site

WEAKNESSES

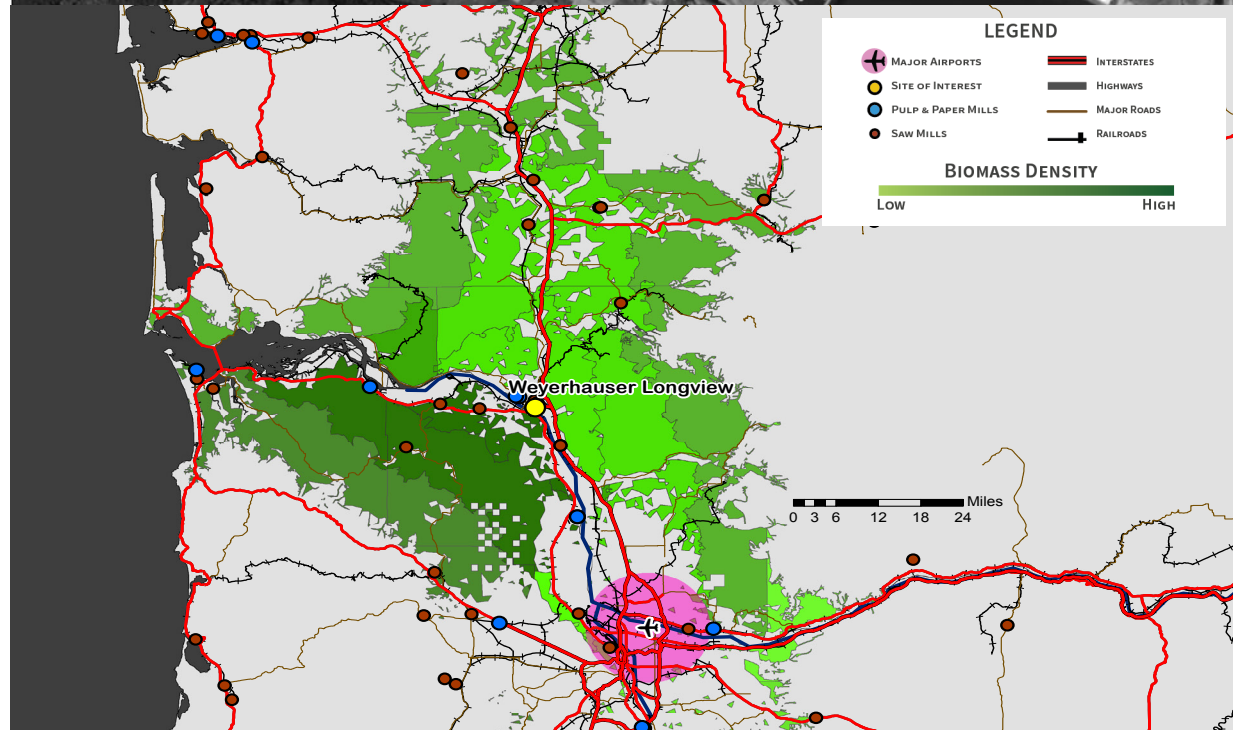
- Crowded site with very little room for full plant expansion
- No greenfields within direct proximity to site to develop that are owned by Weyerhaeuser

OPPORTUNITIES

- Located adjacent to the Columbia River and also existing rail line access on site
- Only 5 miles away I5
- Only 54 mile to PDX
- Biomass availability of 740,000 BDT within 90 minutes of mill

THREATS

- Competition for space and power with Norpac venture neighboring proposed grey field site.
- Competition for Biomass with neighboring mills in the area. (Kapstone and GP Camas)



SITE DESCRIPTION

- 687 Acres
- Kraft
- Products: Paper
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric Name & \$0.0382/KwH
- Natural Gas Name & \$0.45782/unit
- Boiler - Wood/44 MW

TRANSPORTATION

- | | | |
|---------|---|---------|
| • Road | Y | 6 Miles |
| • Rail | Y | On Site |
| • Barge | Y | On Site |
| • I-5 | | 6 miles |

REGIONAL MARKET

- SEATAC: 116 Miles
- PDX: 54 Miles

BIOMASS QUANTITIES

- 30 Minutes: 60K BDT
- 60 Minutes: 340K BDT
- 90 Minutes: 760K BDT

INCENTIVES

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Weyerhaeuser Industries

LONGVIEW, COWLITZ COUNTY, WA



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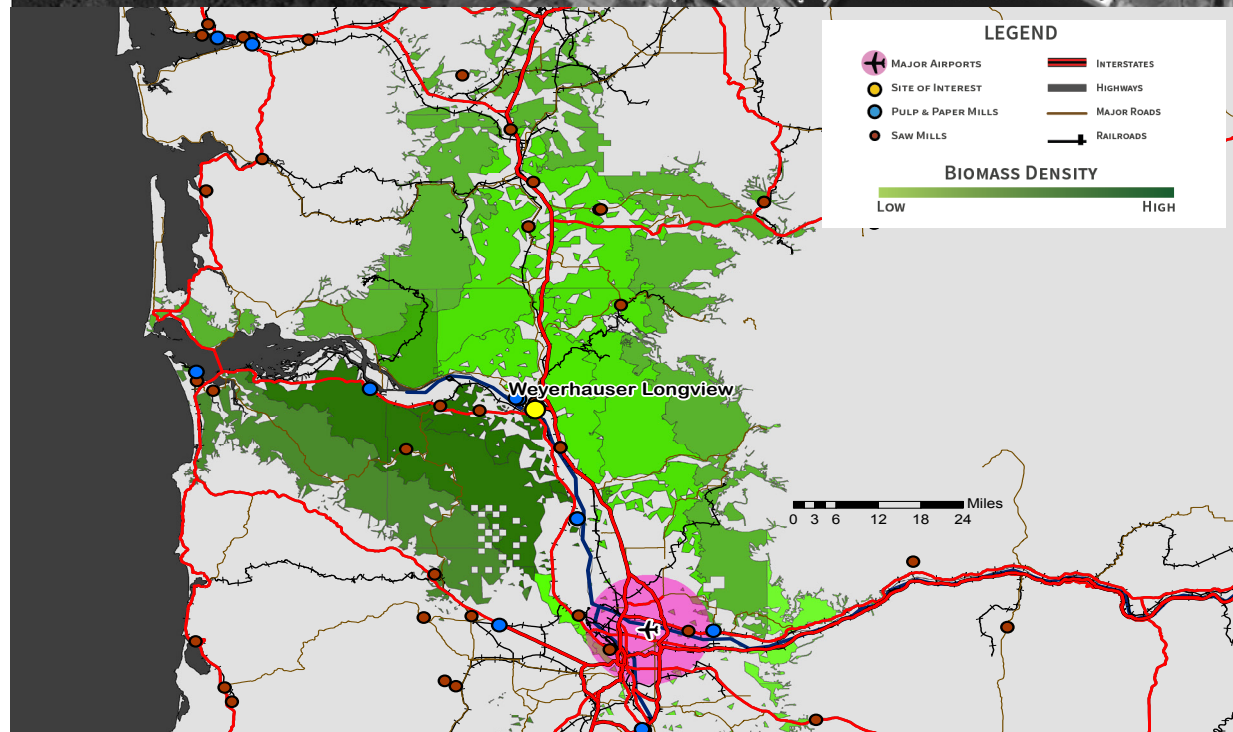
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



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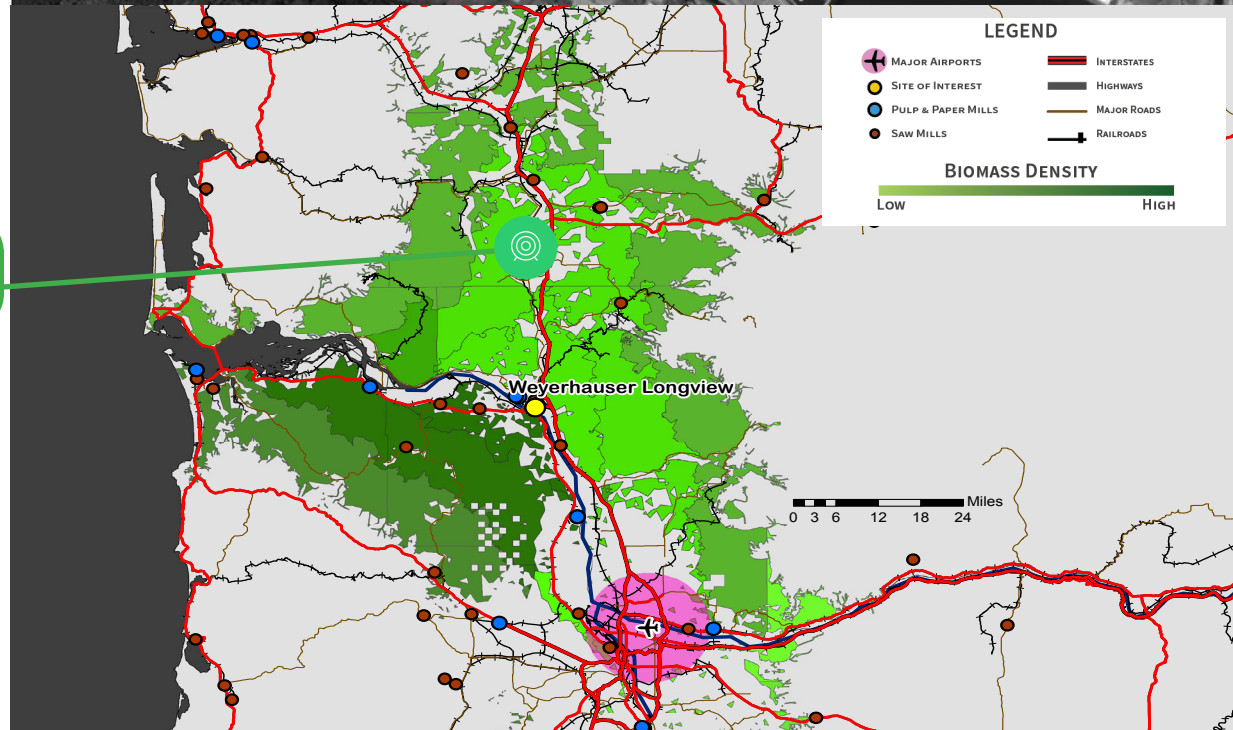
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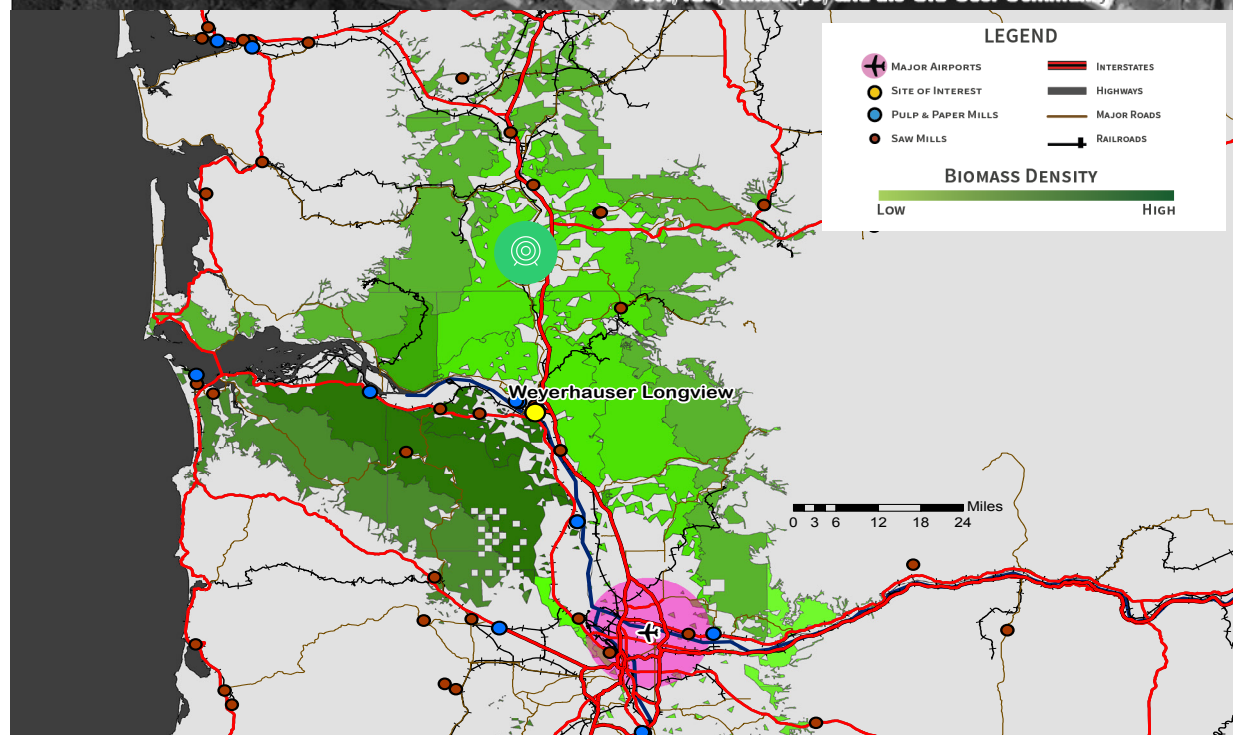
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Kapstone Paper Mill

LONGVIEW, COWLITZ COUNTY, WA



STRENGTHS

- Potential greenfield onsite (49.84 acres)
- Rail onsite and possible access to port
- Wastewater treatment plant onsite (57 MGD)
- Onsite steam and power generation (25MW)
- Friendly climate with local professionals

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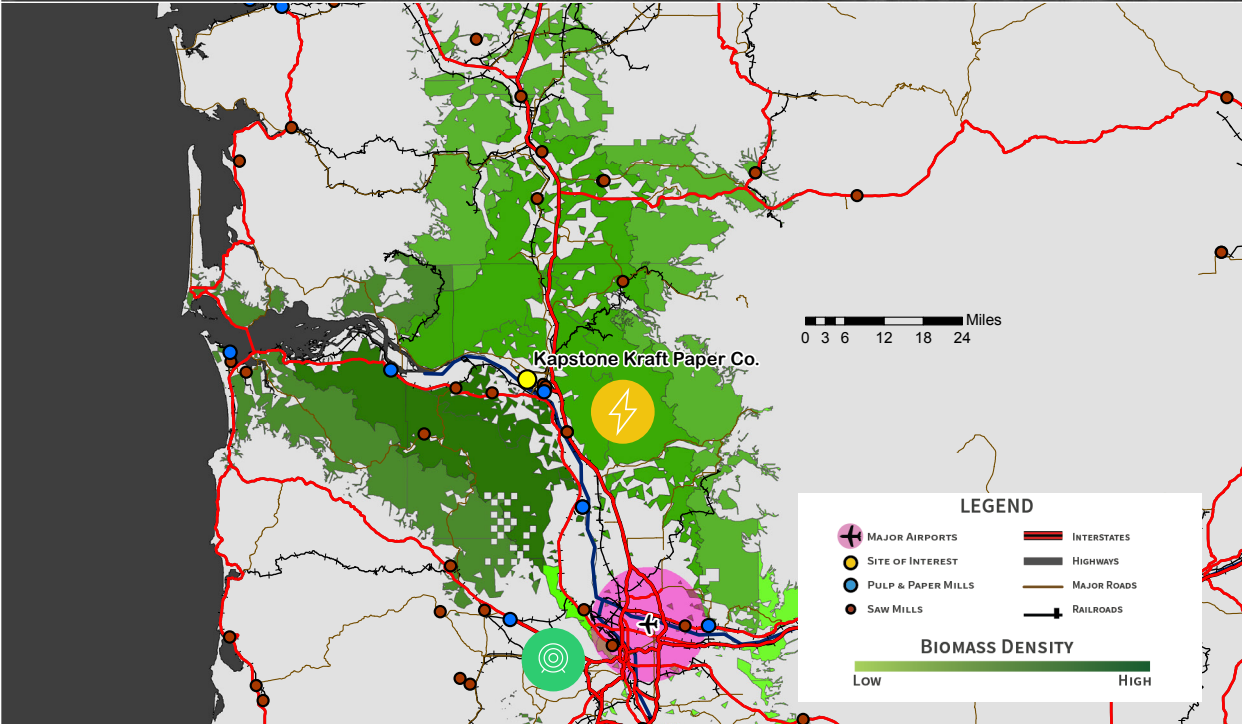
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- Labor force may be an issue - just ended a 5 month strike this September

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- Close Proximity to PDX (39 miles) and Hillsboro (39 miles) Airports
- Large biomass availability (760,000 BDT within 90 minutes)

THREATS

- Competition for materials by nearby mills (Weyerhaeuser Longview)
- Changing labor law climates



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- Co-gen boilers onsite - N

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- Road Y <5 Miles
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- SEATAC: 122 Miles
- PDX: 39 Miles

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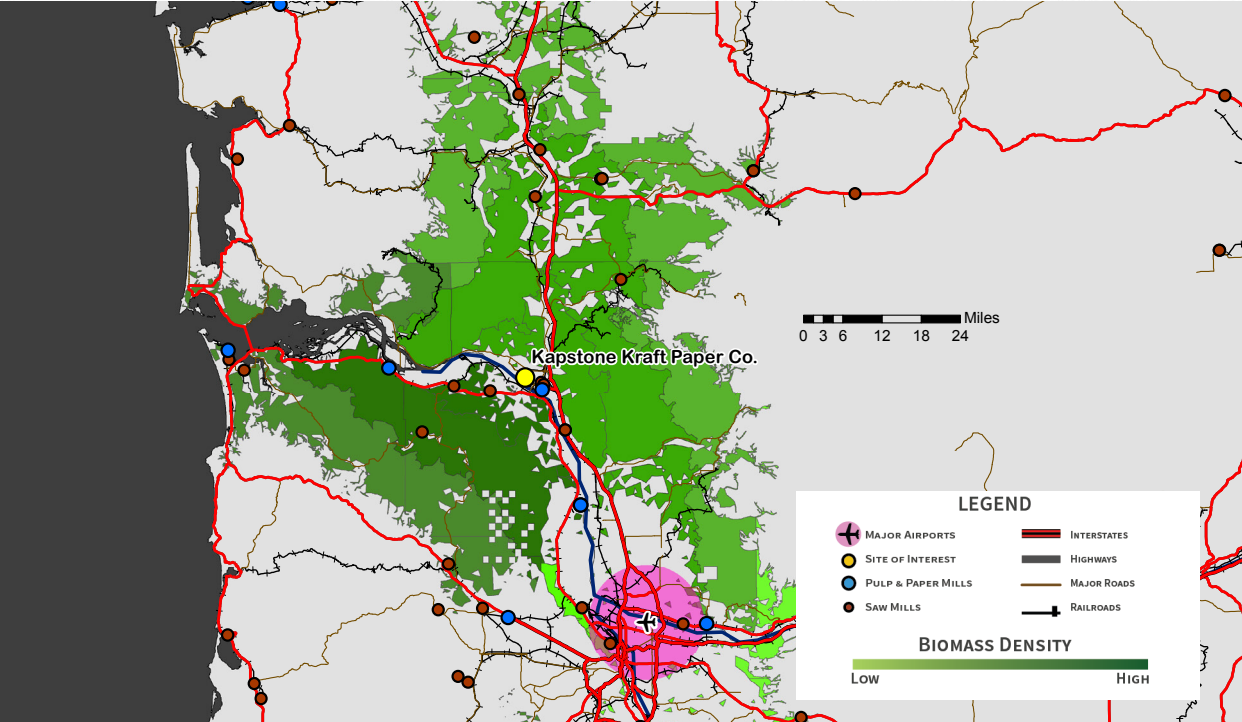
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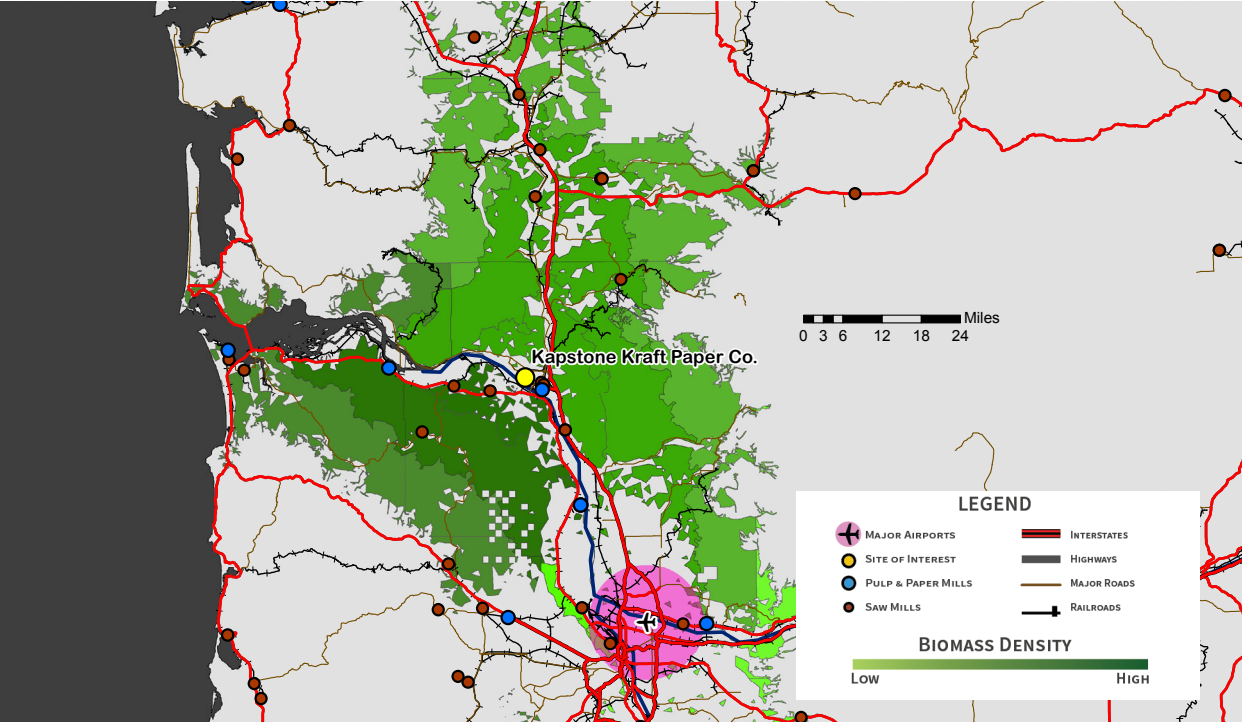
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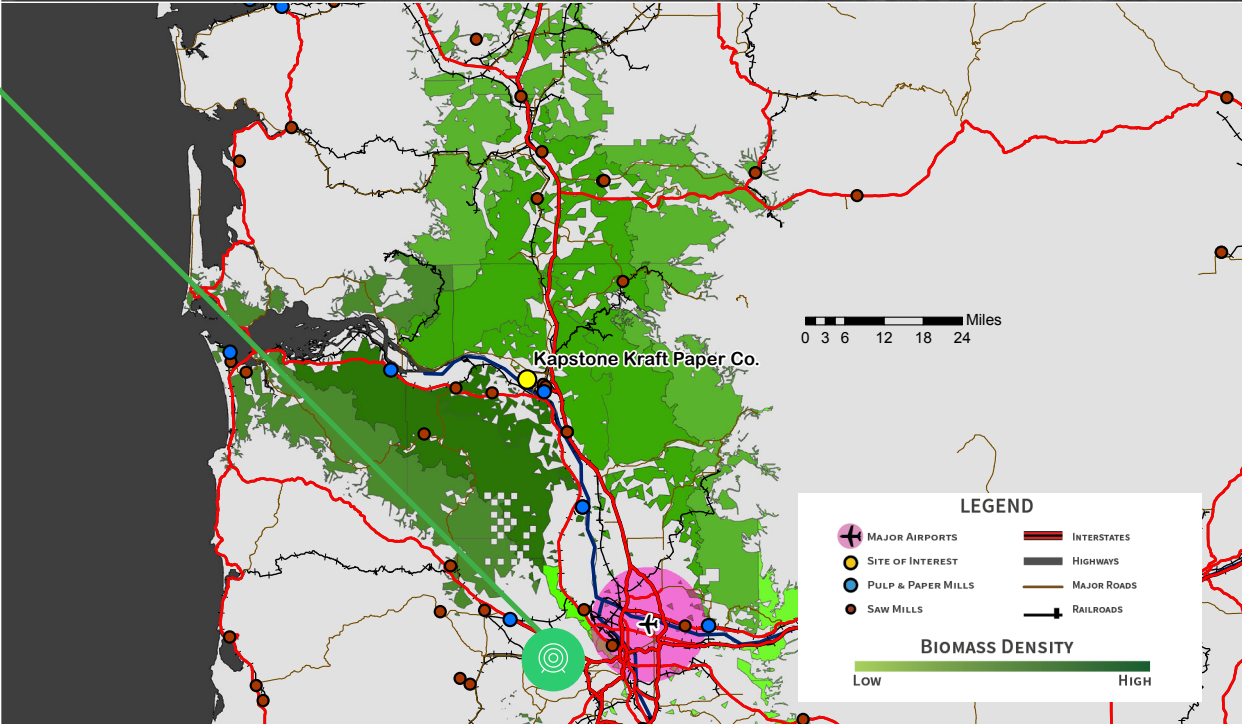
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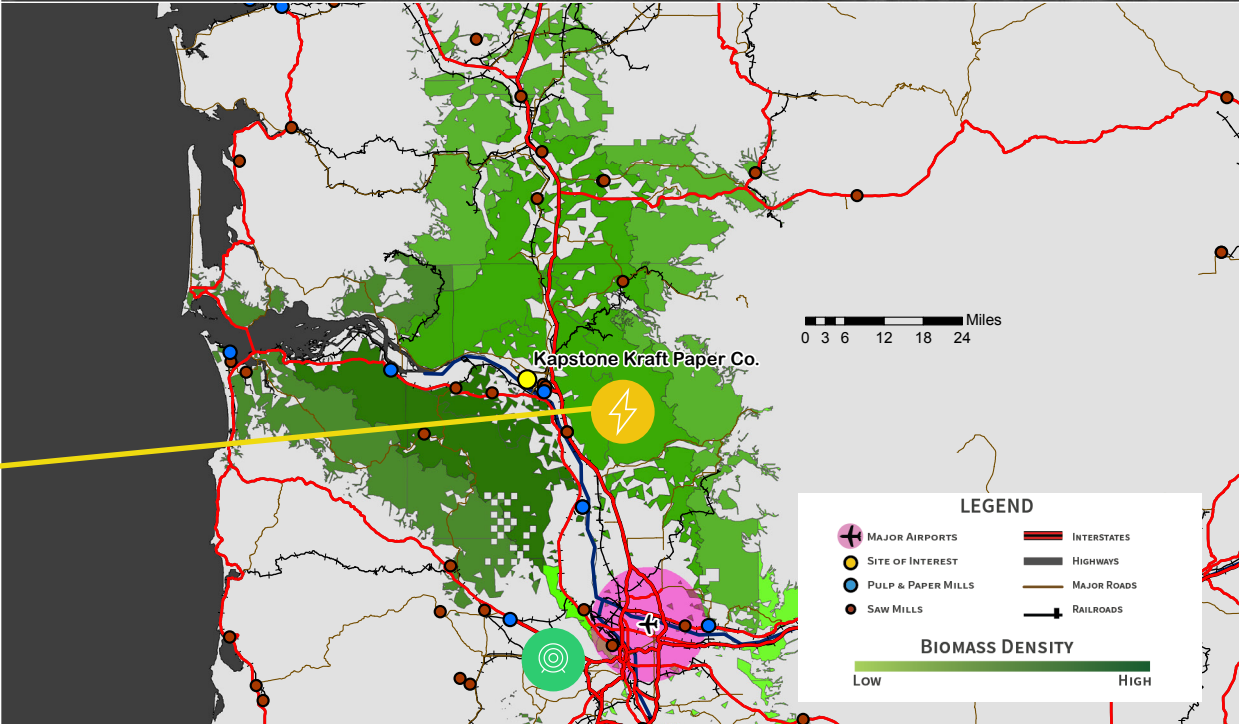
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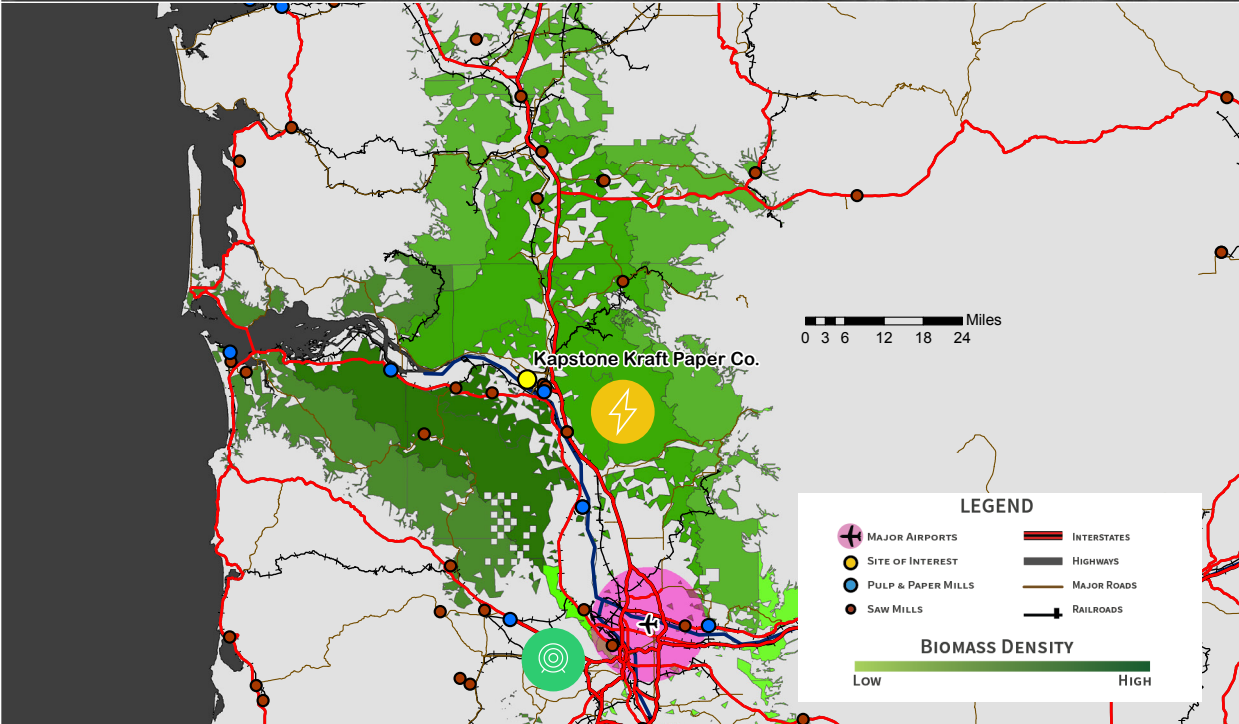
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WestRock - Newberg

NEWBERG, YAMHILL COUNTY, OR



STRENGTHS

- One of WestRock's recent West Coast investments.
- Now owned by the second largest packaging company: \$15 billion in revenues.
- Existing water treatment plant for interaction with the Willamette River.

WEAKNESSES

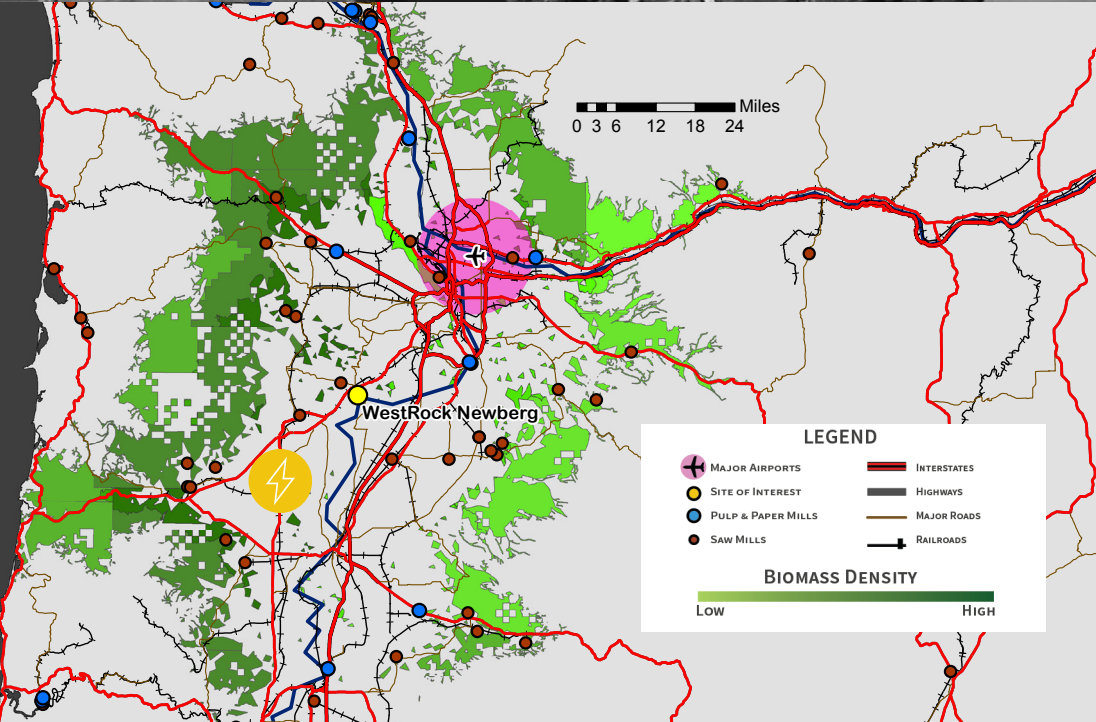
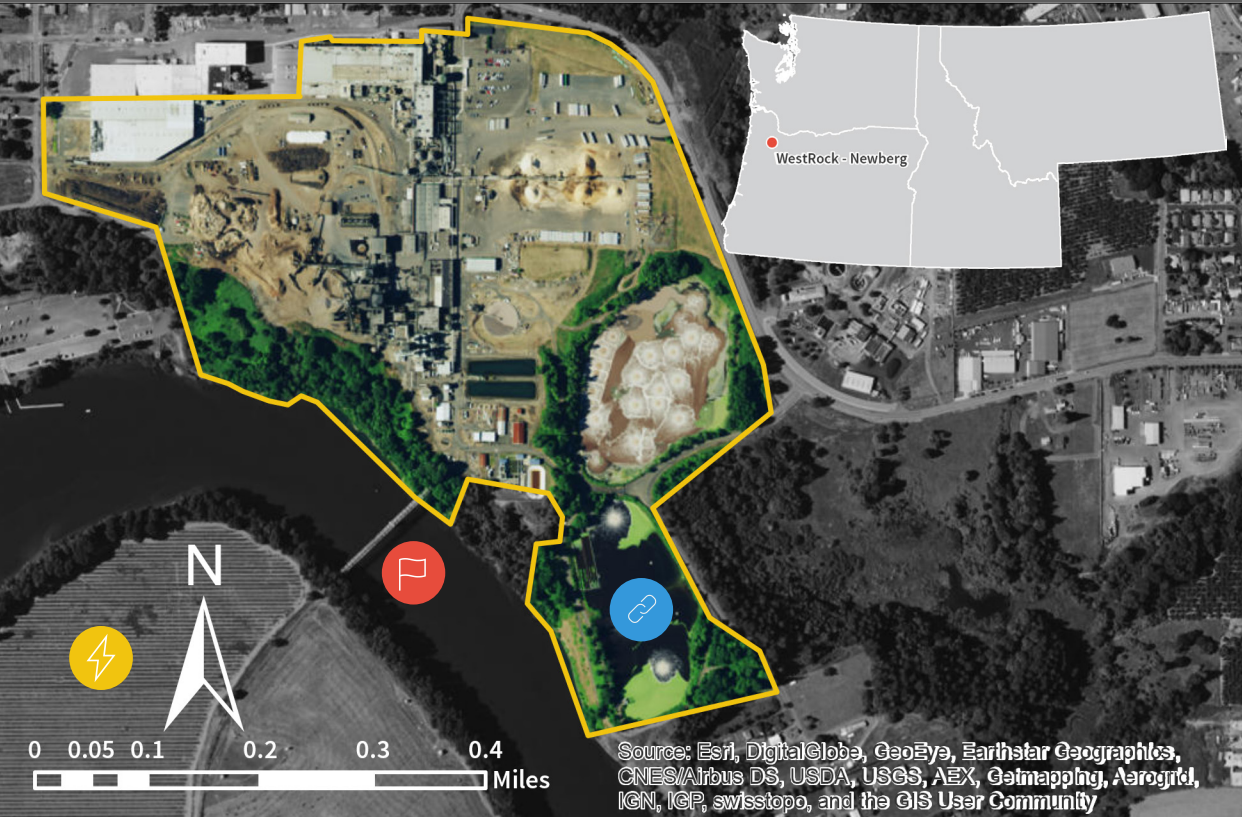
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- Site seems to have limited room for pilot plant (146 acre parcel size)
- Willamette River cannot support commercial shipping to the major market of Portland.

OPPORTUNITIES

- Located 48 miles from PDX (immediate access to Highway 99 running into I-5)
- 510,000 BDT of residuals available within 90 minutes.

THREATS

- Farming industry is booming and surrounds site.
- Biomass is limited to 75,000 BDT per year within 60 minute drive-time.



SITE DESCRIPTION

- 146 Acres
- Thermo-mechanical process
- Products: Newsprint and Packaging
- Air Permit: Y
- NPDES Permit: N

UTILITIES

- Electric ~\$0.0483/Kwh
- Natural Gas ~\$0.46/therm
- Boilers On-Site - 2 Hogfuel, 4 Natural Gas

TRANSPORTATION

- Road Y <1 Mile
- Rail Y On Site
- Barge N NA
- I-5 13 Miles

REGIONAL MARKET

- SEATAC: 190 Miles
- PDX: 48 Miles

BIOMASS QUANTITIES

- 30 Minutes: 7K BDT
- 60 Minutes: 75K BDT
- 90 Minutes: 510K BDT

INCENTIVES

- Enterprise Zone Tax Exemption
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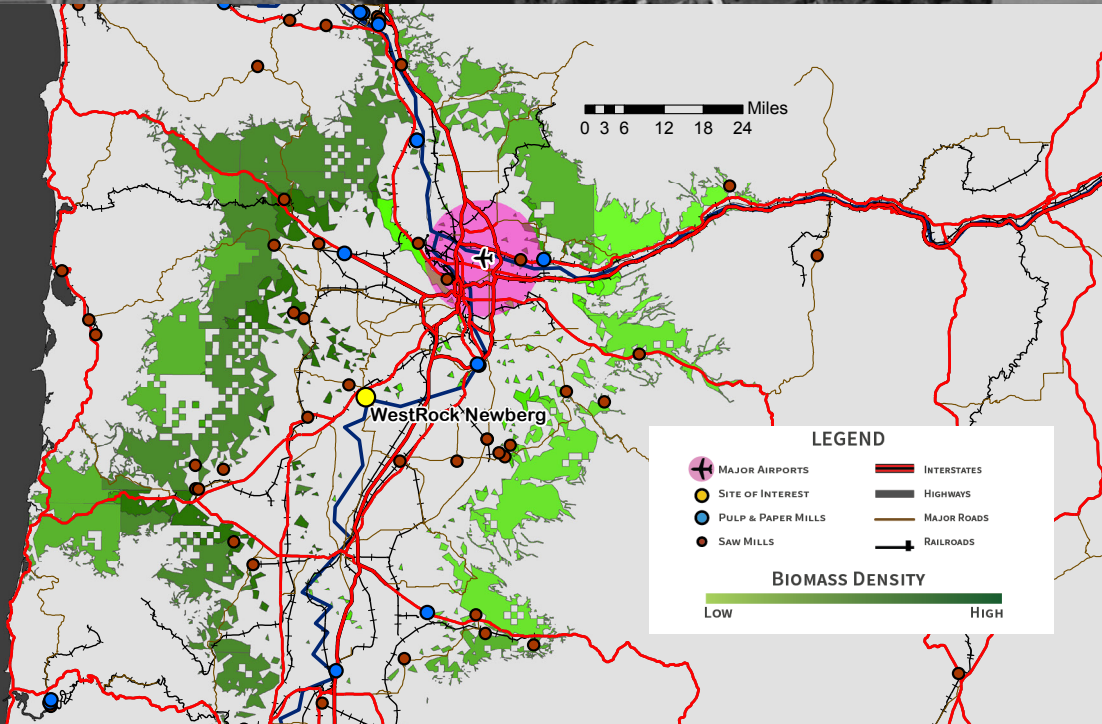
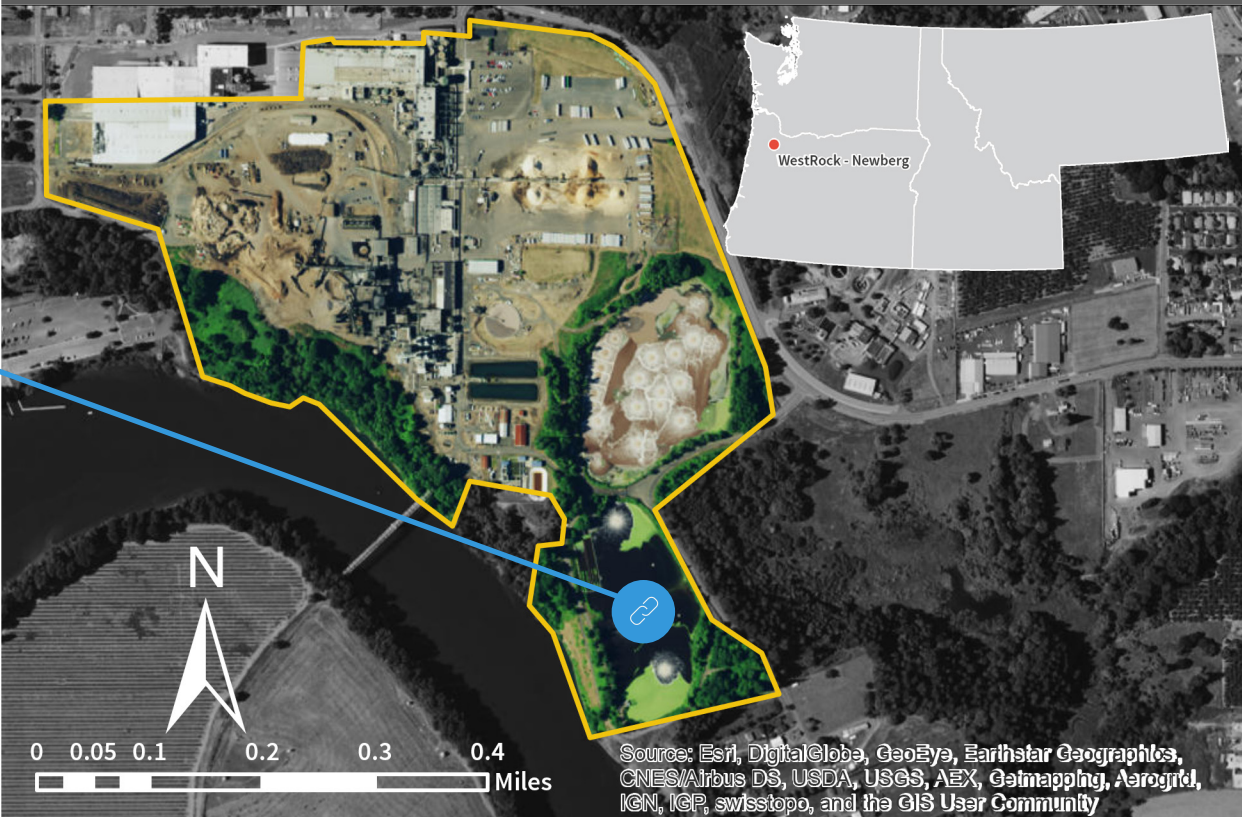
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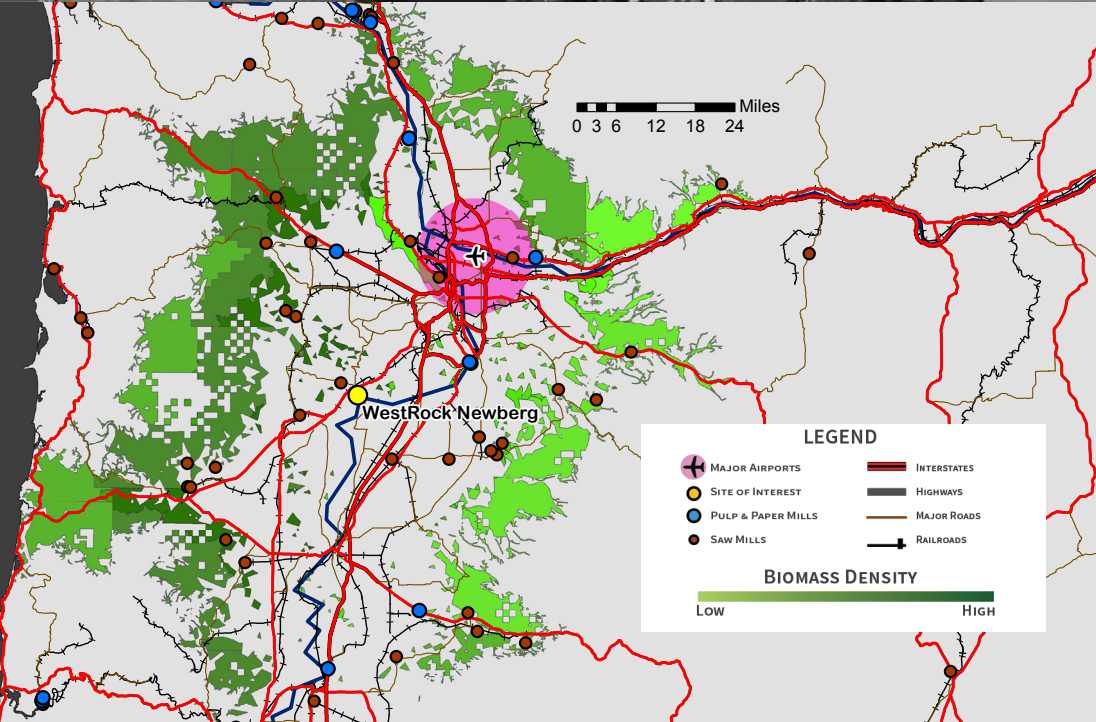
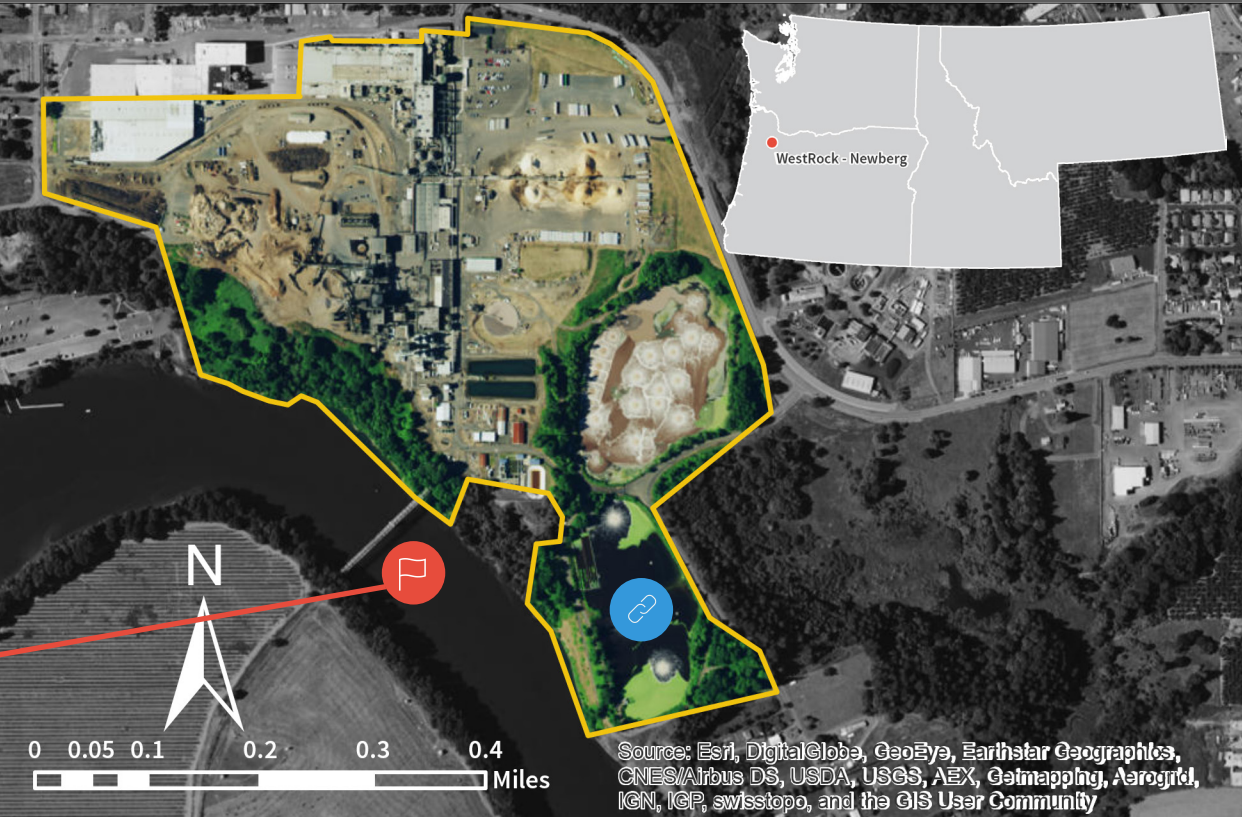
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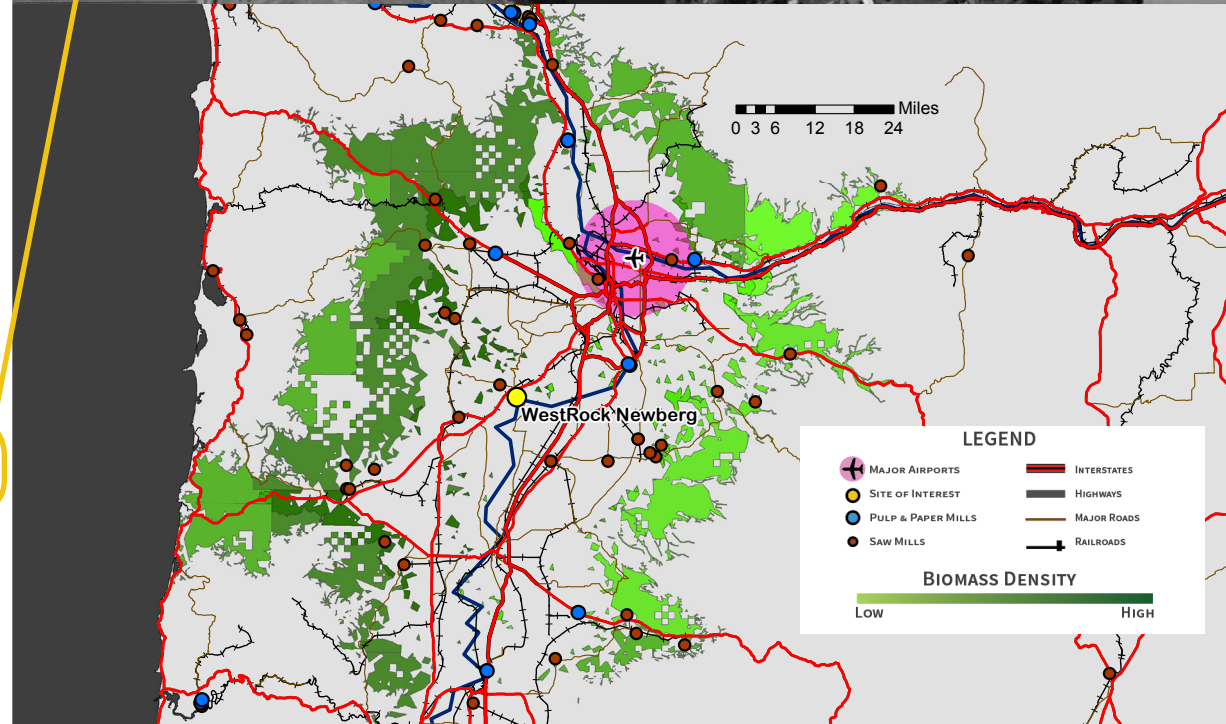
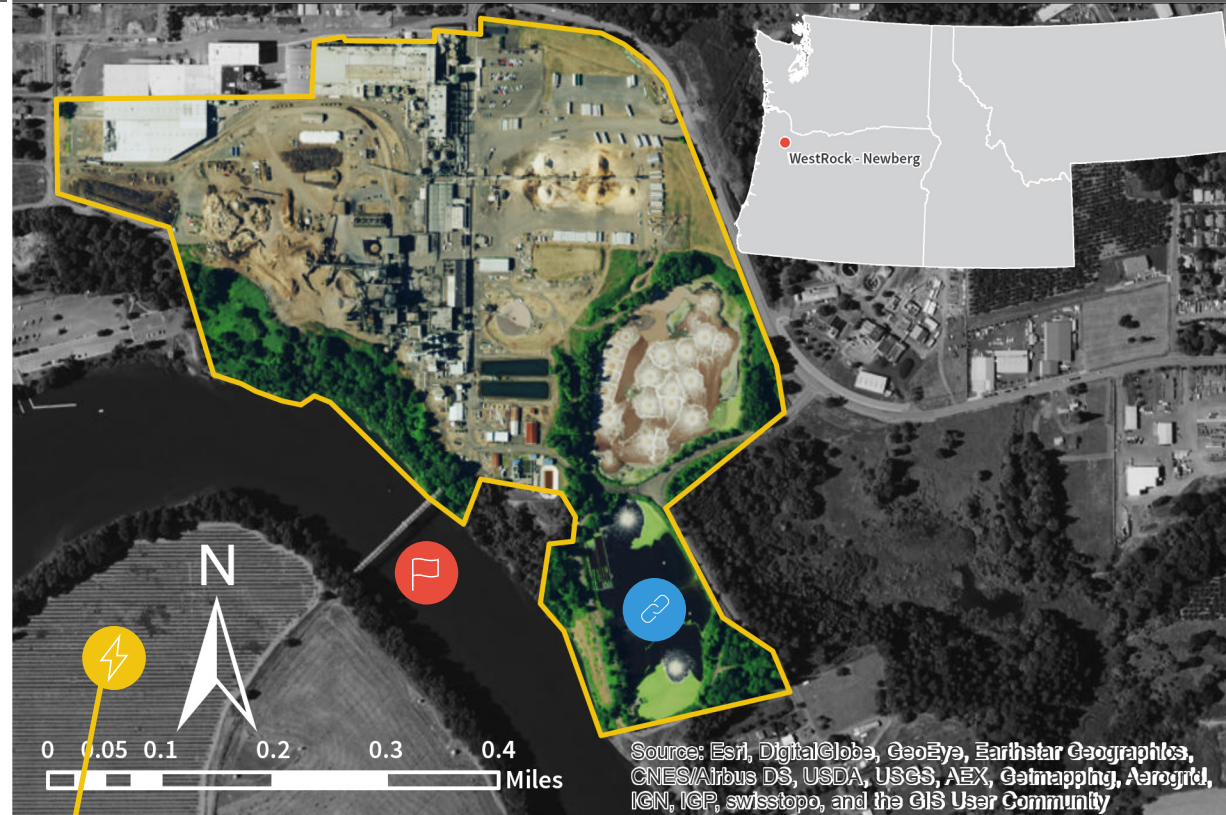
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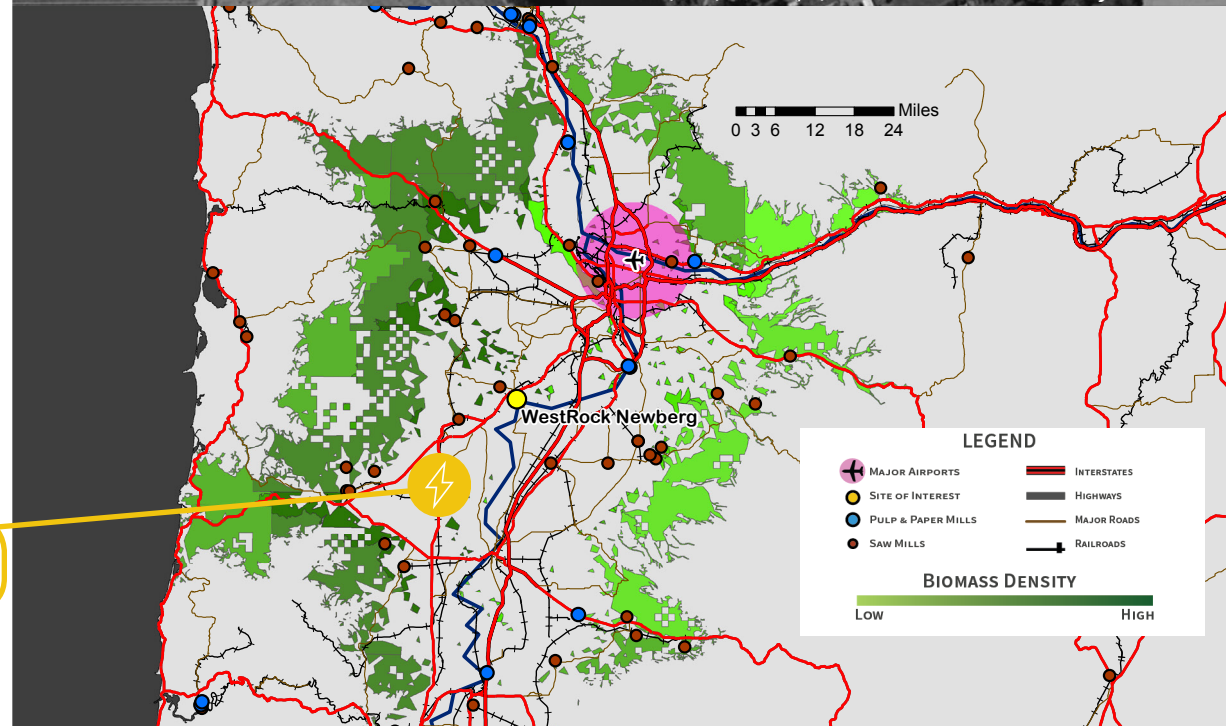
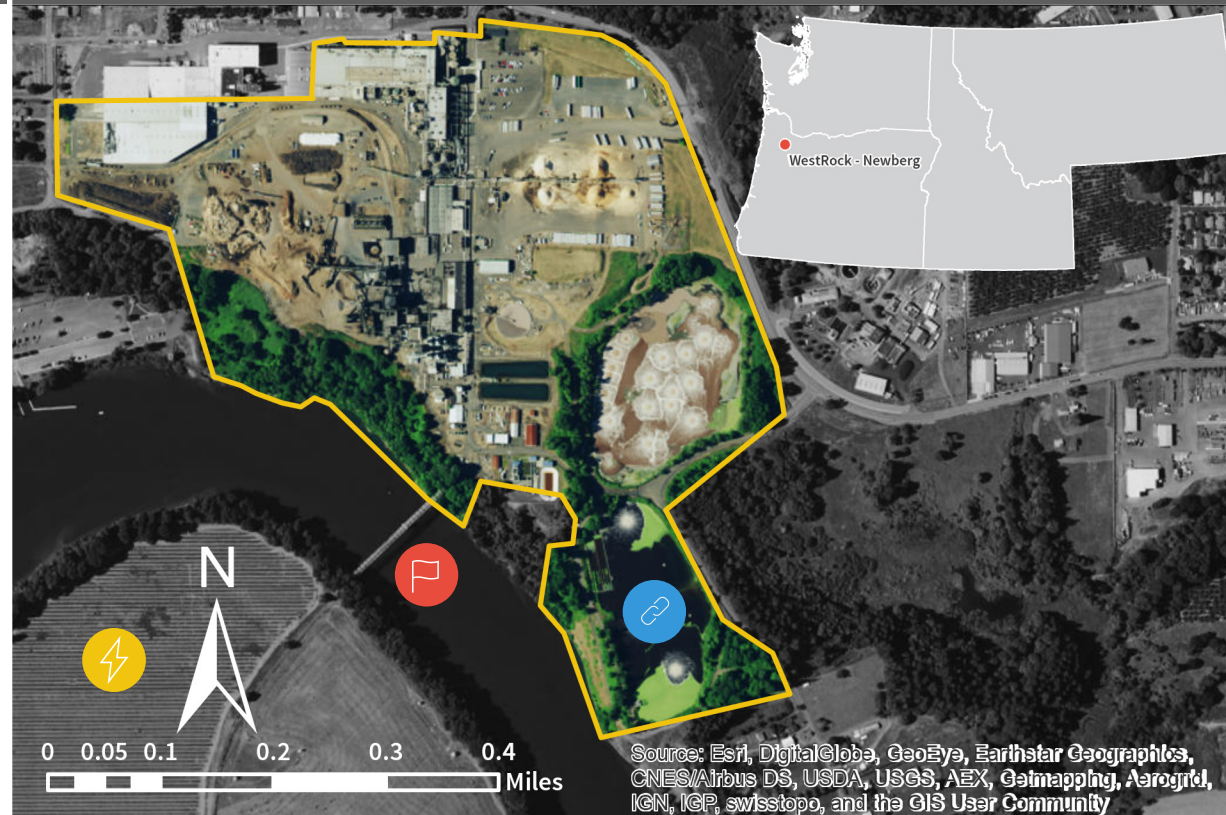
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- Rail Y On Site
- Barge N NA
- I-5 13 Miles

REGIONAL MARKET

- SEATAC: 190 Miles
- PDX: 48 Miles

BIOMASS QUANTITIES

- 30 Minutes: 7K BDT
- 60 Minutes: 75K BDT
- 90 Minutes: 510K BDT

INCENTIVES

- Enterprise Zone Tax Exemption
- Alternative Fuel Loans
- Biofuel Production Tax Exemptions

WestRock - Newberg

NEWBERG, YAMHILL COUNTY, OR



STRENGTHS

- One of WestRock's recent West Coast investments.
- Now owned by the second largest packaging company: \$15 billion in revenues.
- Existing water treatment plant for interaction with the Willamette River.

WEAKNESSES

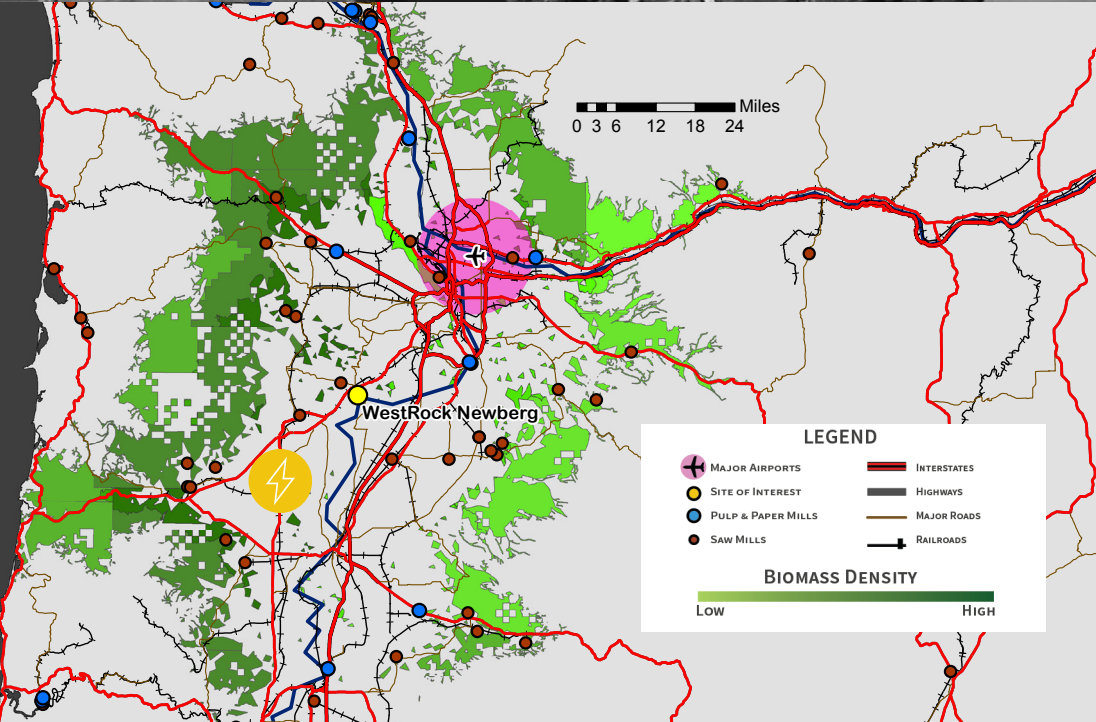
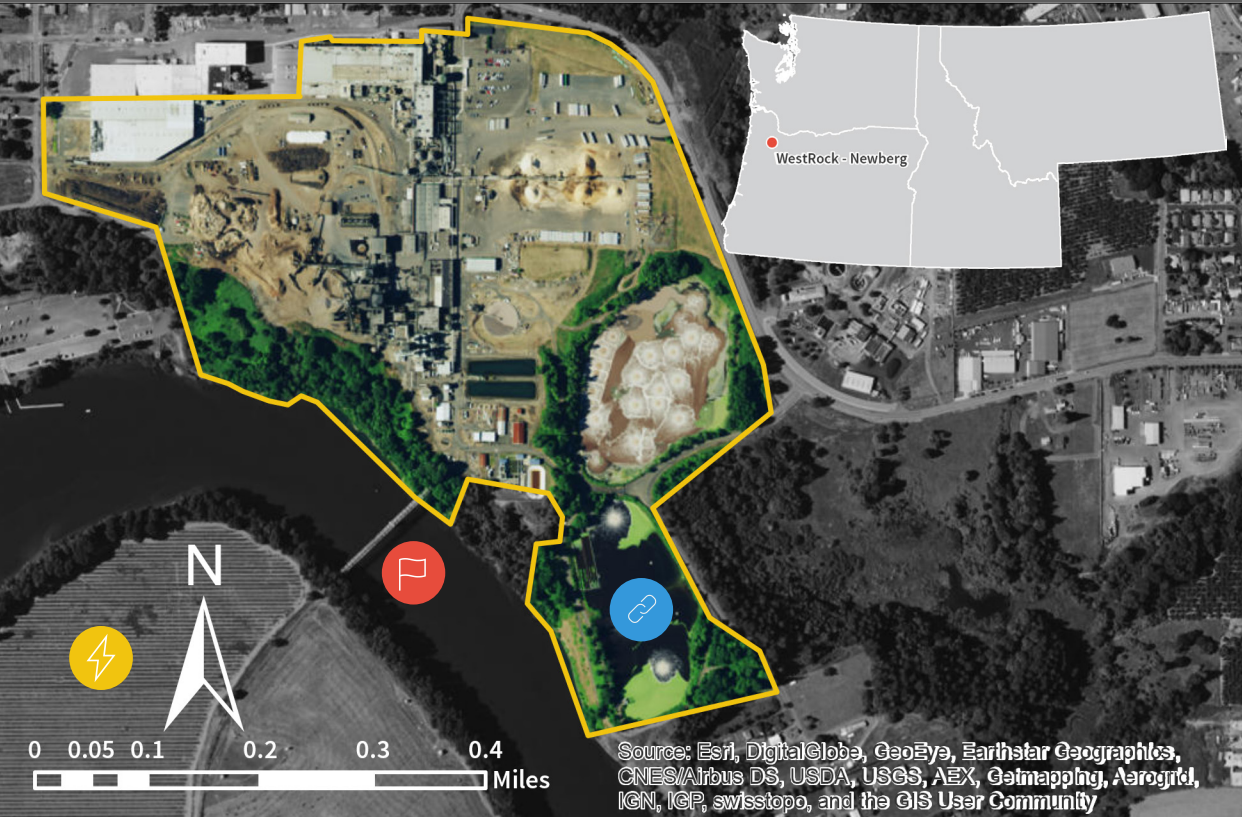
- Leadership and direction may remain in flux due to recent sale to WestRock.
- Site seems to have limited room for pilot plant (146 acre parcel size)
- Willamette River cannot support commercial shipping to the major market of Portland.

OPPORTUNITIES

- Located 48 miles from PDX (immediate access to Highway 99 running into I-5)
- 510,000 BDT of residuals available within 90 minutes.

THREATS

- Farming industry is booming and surrounds site.
- Biomass is limited to 75,000 BDT per year within 60 minute drive-time.



SITE DESCRIPTION

- 146 Acres
- Thermo-mechanical process
- Products: Newsprint and Packaging
- Air Permit: Y
- NPDES Permit: N

UTILITIES

- Electric ~\$0.0483/Kwh
- Natural Gas ~\$0.46/therm
- Boilers On-Site - 2 Hogfuel, 4 Natural Gas

TRANSPORTATION

- Road Y <1 Mile
- Rail Y On Site
- Barge N NA
- I-5 13 Miles

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INCENTIVES

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International Paper

SPRINGFIELD, LANE COUNTY, OR



STRENGTHS

- On site green space: approximately 33 acres
- On site waster water treatment ponds
- Receiving \$100M upgrade to mill
- Tax break provided by Springfield while they upgrade their facility - Community Support

WEAKNESSES

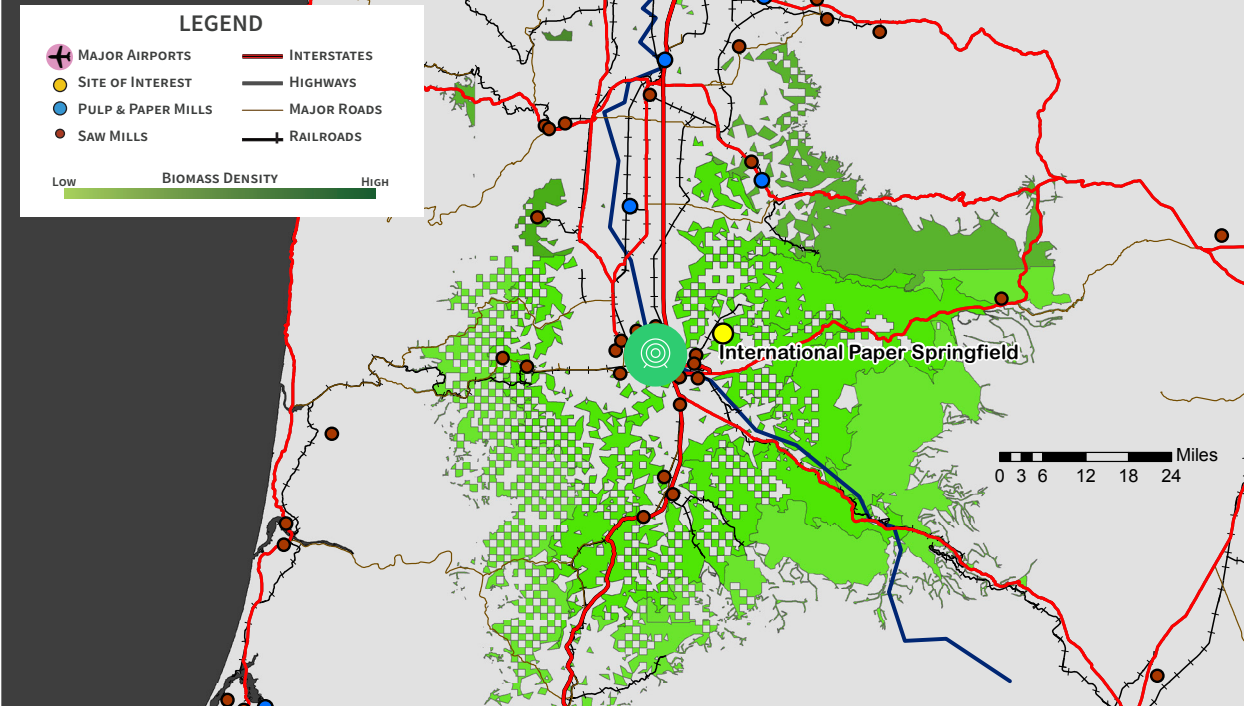
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- Struggling Plant - considering 20% layoffs
- Recently received tax break on upgrades so site could stay open.

OPPORTUNITIES

- Proximity to Interstate-5 (I-5)
- Direct Rail connection to site
- Open to entrepreneurial ideas
- 8 lumber mills within 5 miles & 10+ Lumber mills within 25 miles

THREATS

- Located in City - limited space for site
- Far from potential markets (130 miles to PDX)
- Biomass competition - competing with International Paper for biomass in the region



SITE DESCRIPTION

- 316 Acres
- Kraft Process
- Products: Pulp & Paper, Packaging
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric \$0.0483/KwH
- Natural Gas \$0.0005/therm
- Boiler onsite 60 MW

TRANSPORTATION

- Road Y 6 Miles
- Rail Y On Site
- Barge N
- I-5: 6 Miles

REGIONAL MARKET

- SEATAC: 270 Miles
- PDX: 130 Miles
- Eugene: 16 Miles

BIOMASS QUANTITIES

- 30 Minutes: 16K BDT
- 60 Minutes: 140K BDT
- 90 Minutes: 300K BDT

INCENTIVES

- Alternative Fuel Loans
- Biofuel Production Tax Exemption
- Biomass Eligibility for tax credits

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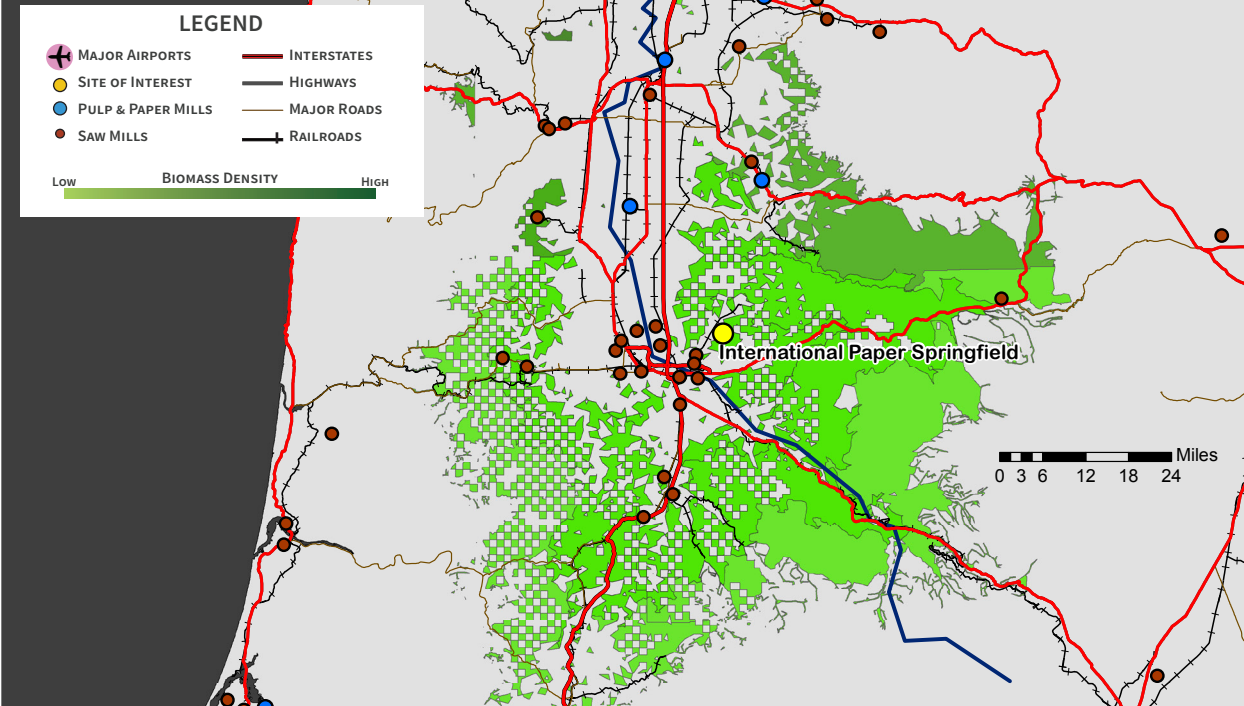
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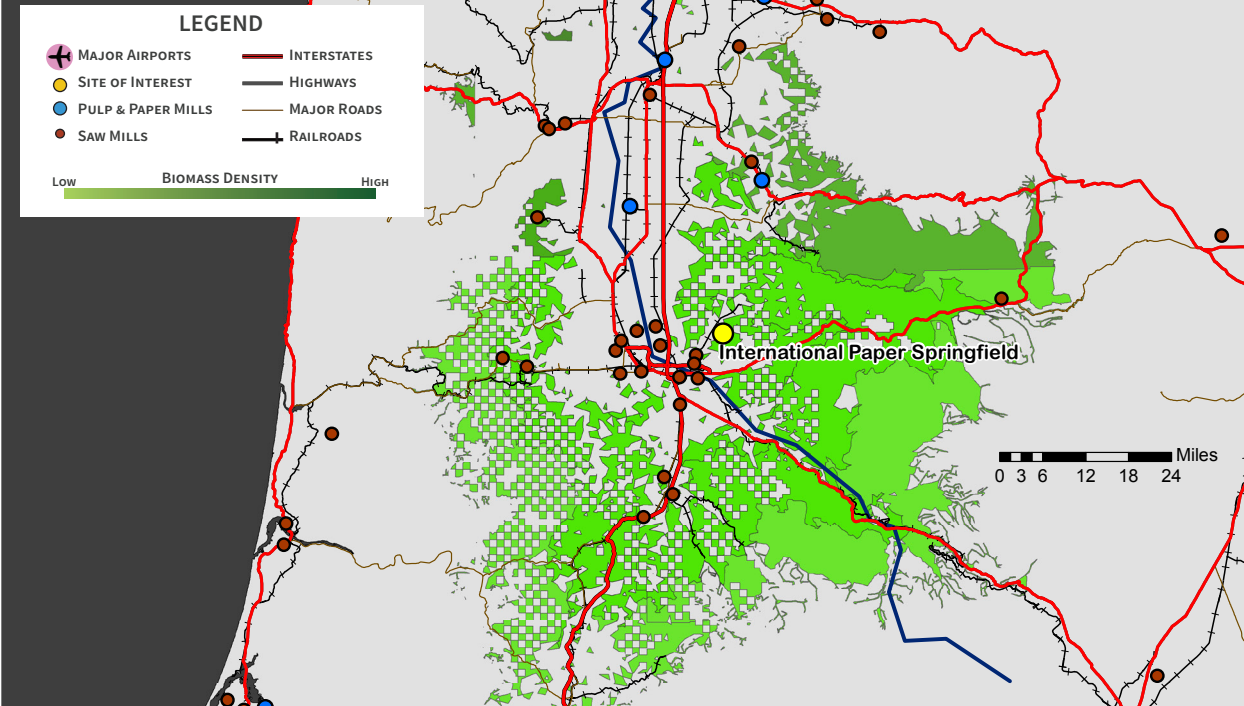
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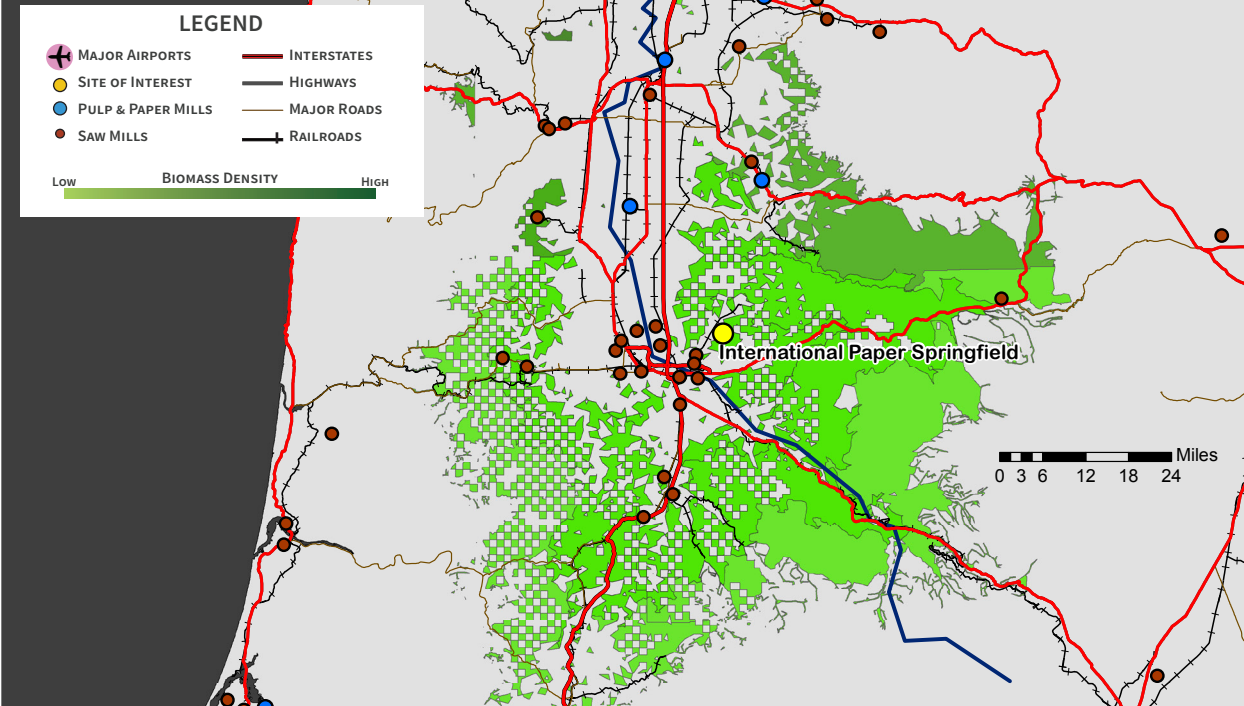
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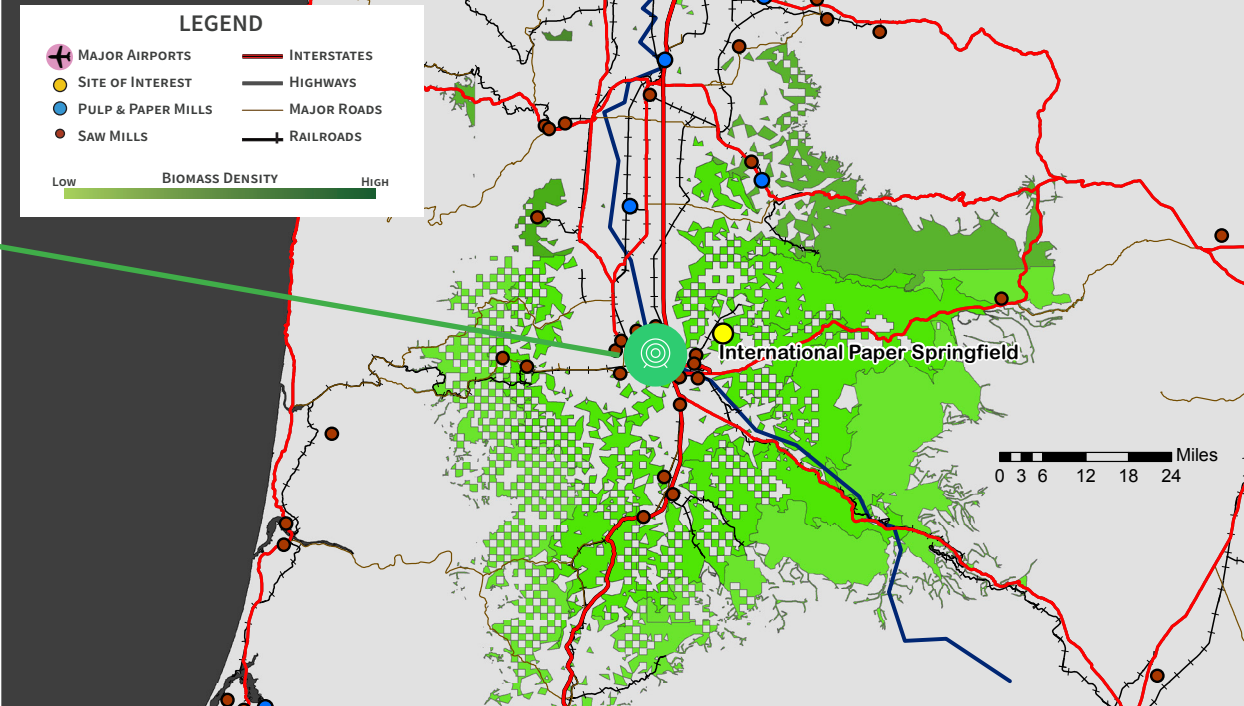
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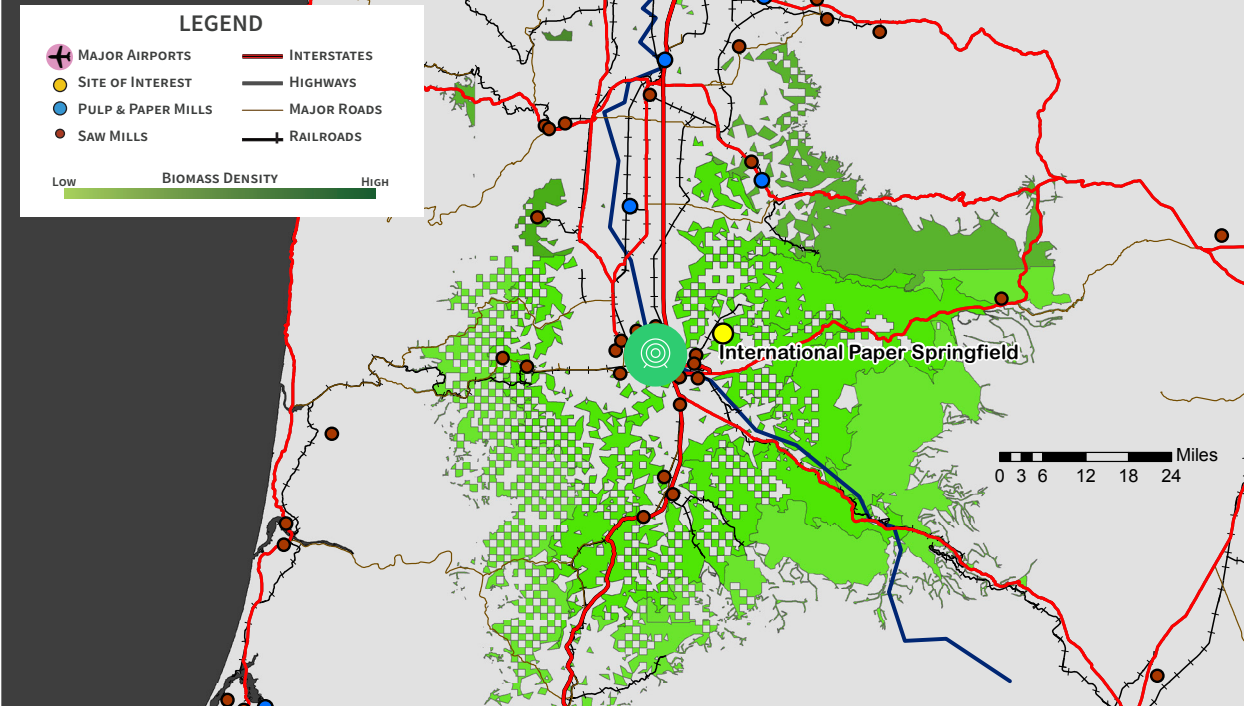
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Cascade Pulp, LLC

HALSEY, LINN COUNTY, OR



STRENGTHS

- Approximately 350 acres of greenfield that is currently farmland
- 2 large water treatment ponds - Each 113,000 gallons - 10 day process
- Invested \$1.3M in small water treatment facility that discharges water into river



WEAKNESSES

- This site shares facility with GP - Existing tension between parties (past lawsuits)
- Boiler wood consumption - competition over biomass availability



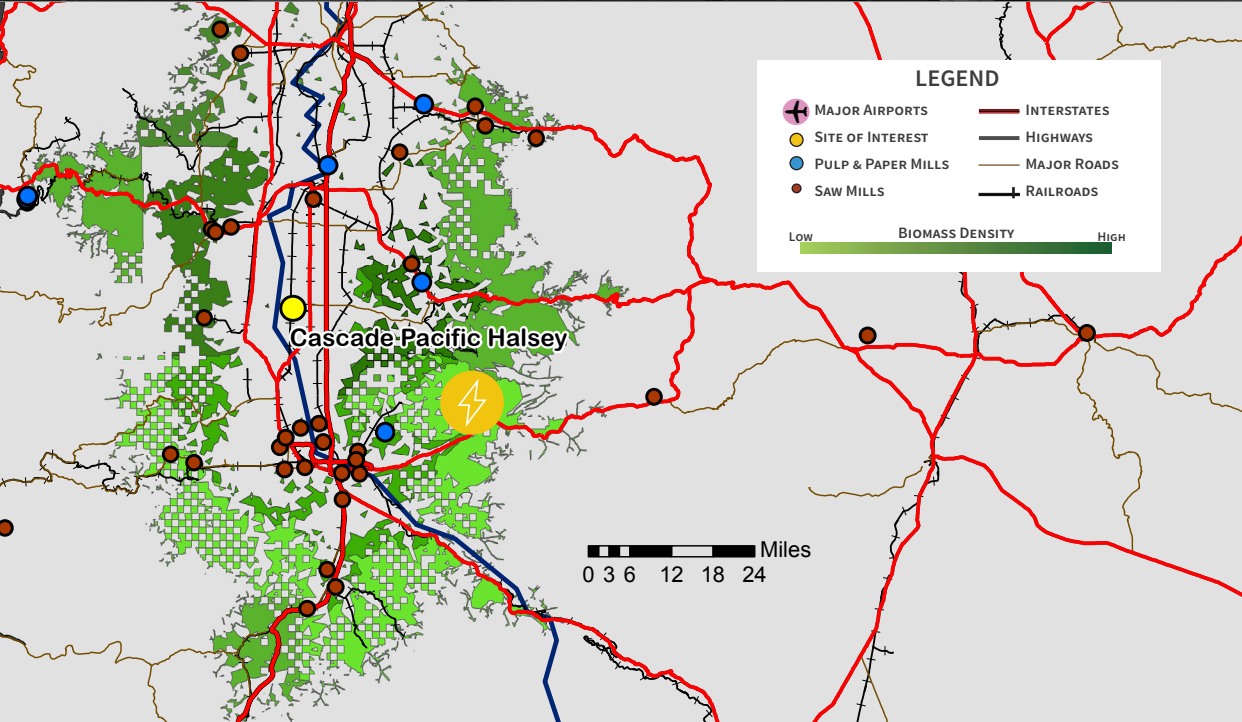
OPPORTUNITIES

- 5 miles from I-5
- Qualify as renewable energy development zone - tax exempt for 5 years
- 2014 ownership change - Hong Kong; International Grand Investment Corporation



THREATS

- Located over 100 miles from nearest market
- Low biomass availability - 230,000 BDT within 90 minutes
- Linn County Unemployment Rate: 6.4% (1.3% above national average)



SITE DESCRIPTION

- 635 Acres
- Kraft Process
- Products: Pulp & Paper
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric \$0.0759/Kwh
- Natural Gas
- Boilers onsite Y 200BDT/yr

TRANSPORTATION

- Road Y 5 Miles
- Rail Y On Site
- Barge N
- I-5 5 Miles

REGIONAL MARKET

- SEATAC: 252 Miles
- PDX: 103 Miles

BIOMASS QUANTITIES

- 30 Minutes: 25K BDT
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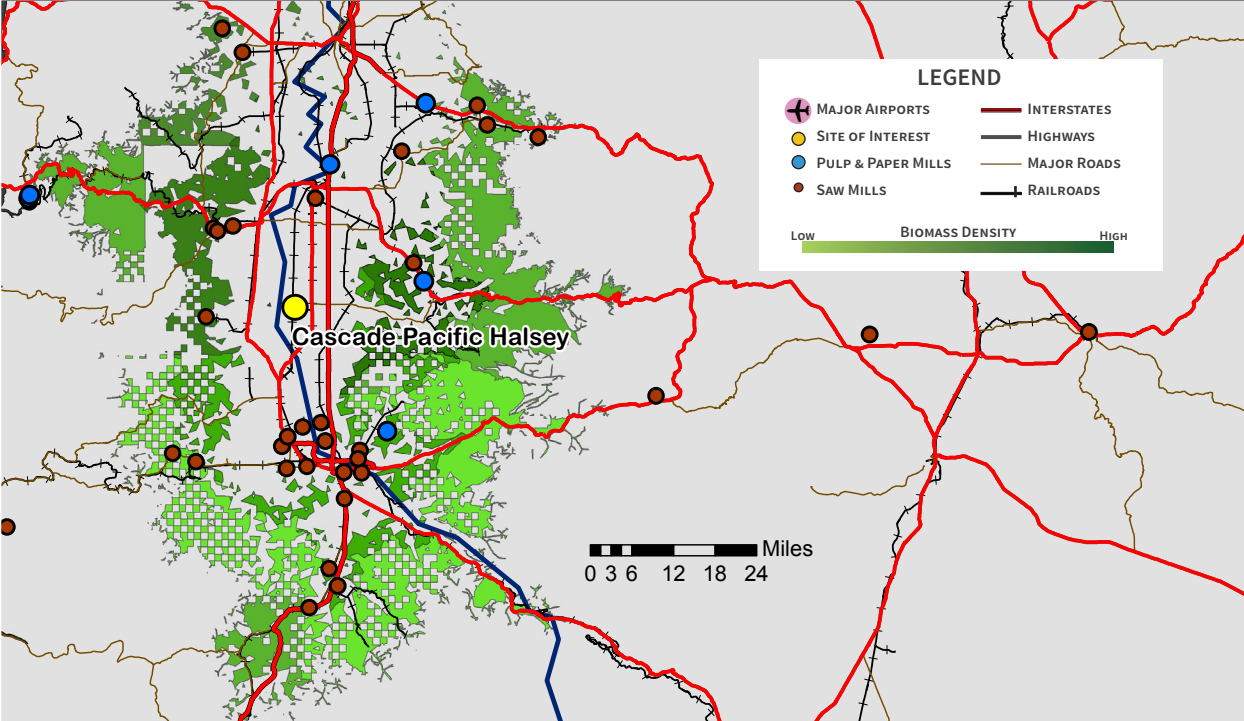
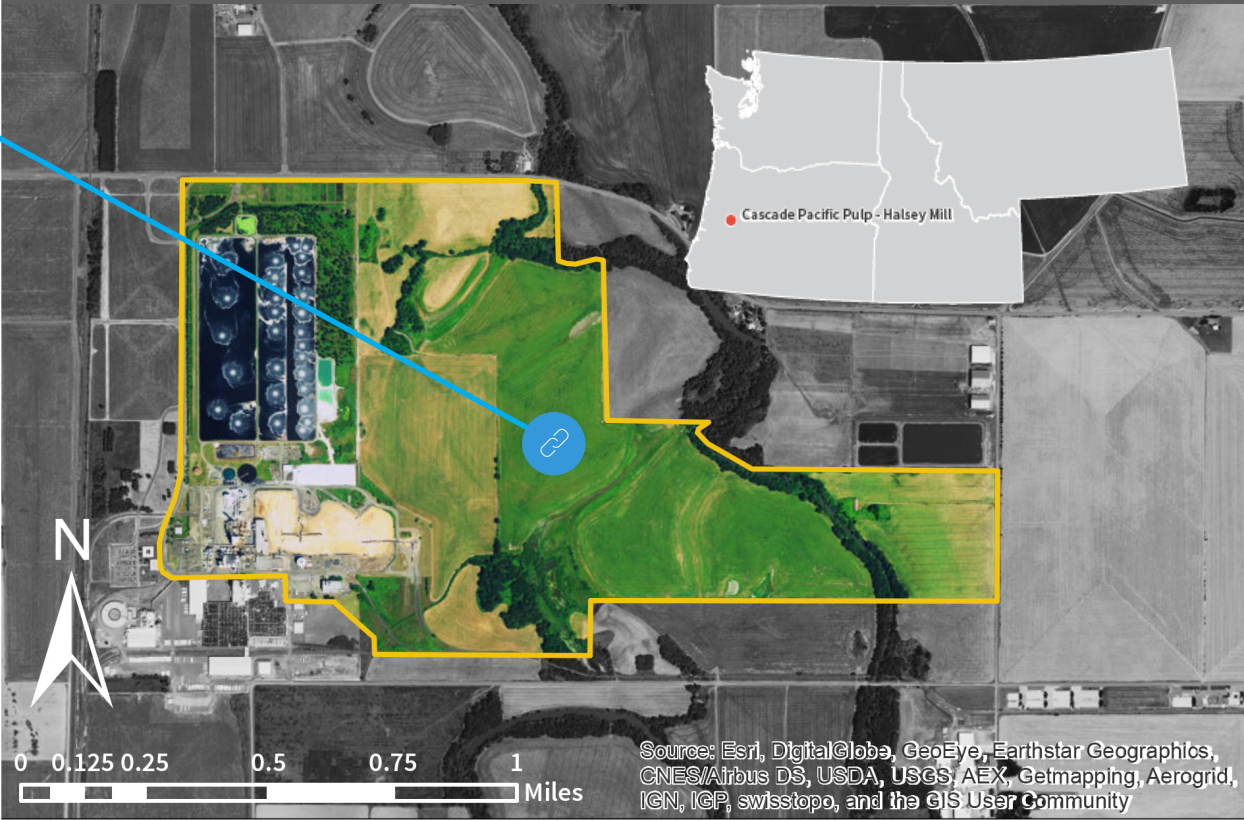
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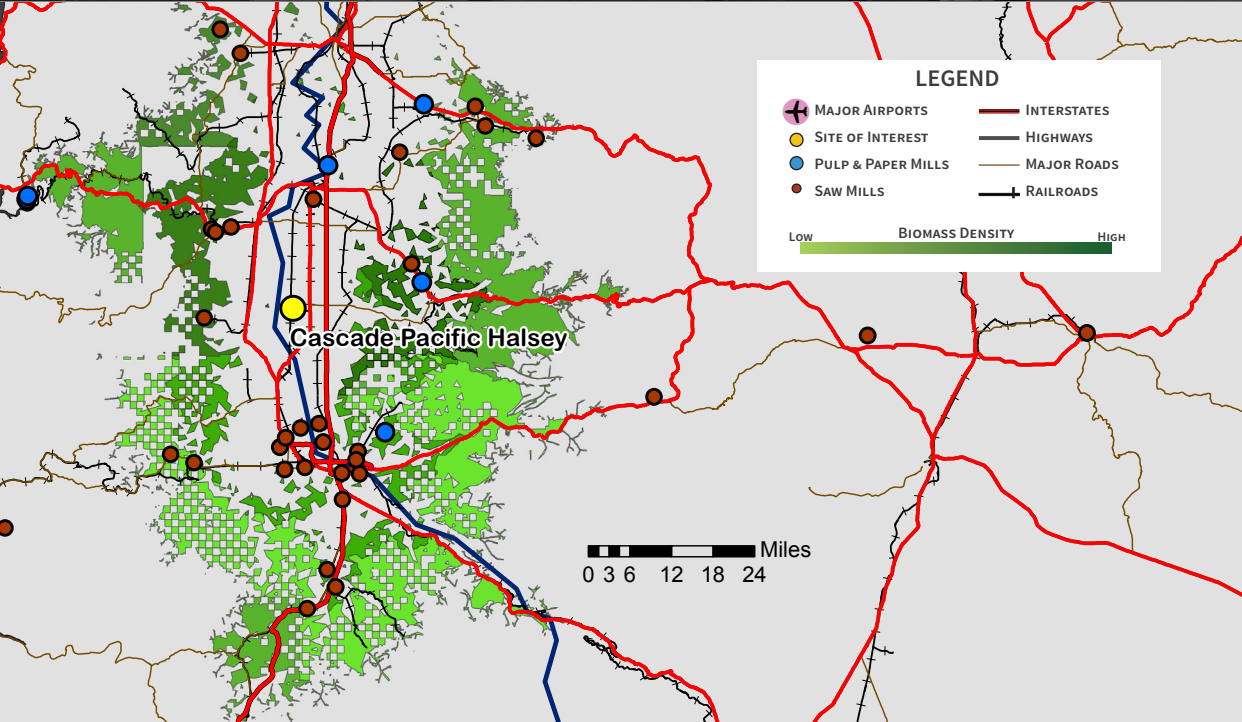
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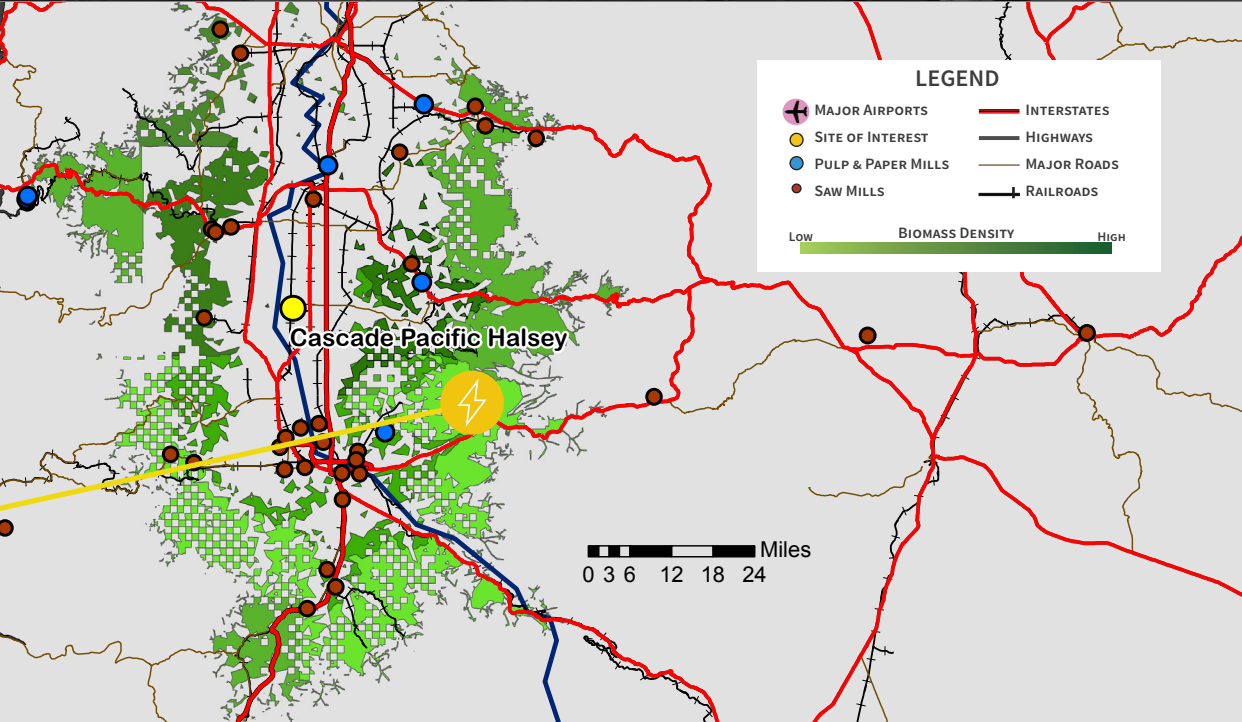
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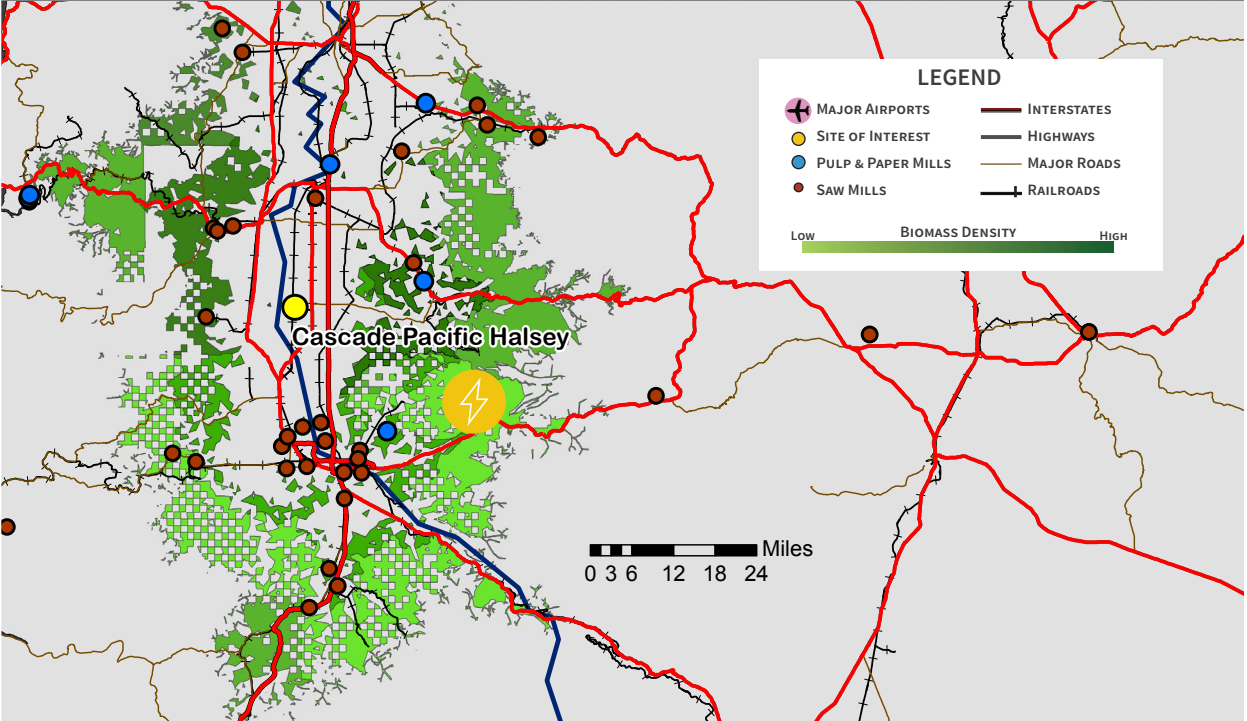
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INCENTIVES

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STRENGTHS

- Mill owns 150 acres of HI zoned greenfield adjacent to existing infrastructure
- Large (33 acre) industrial wastewater treatment plant on site
- Able to receive feedstock via barge

WEAKNESSES

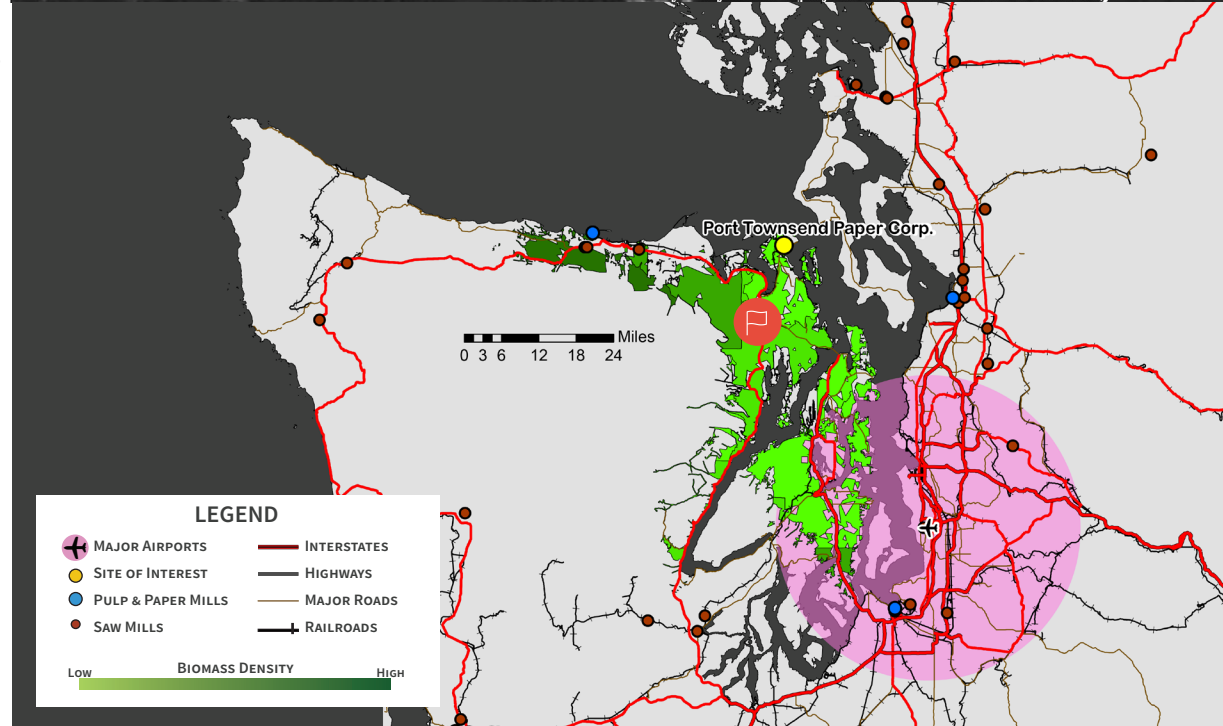
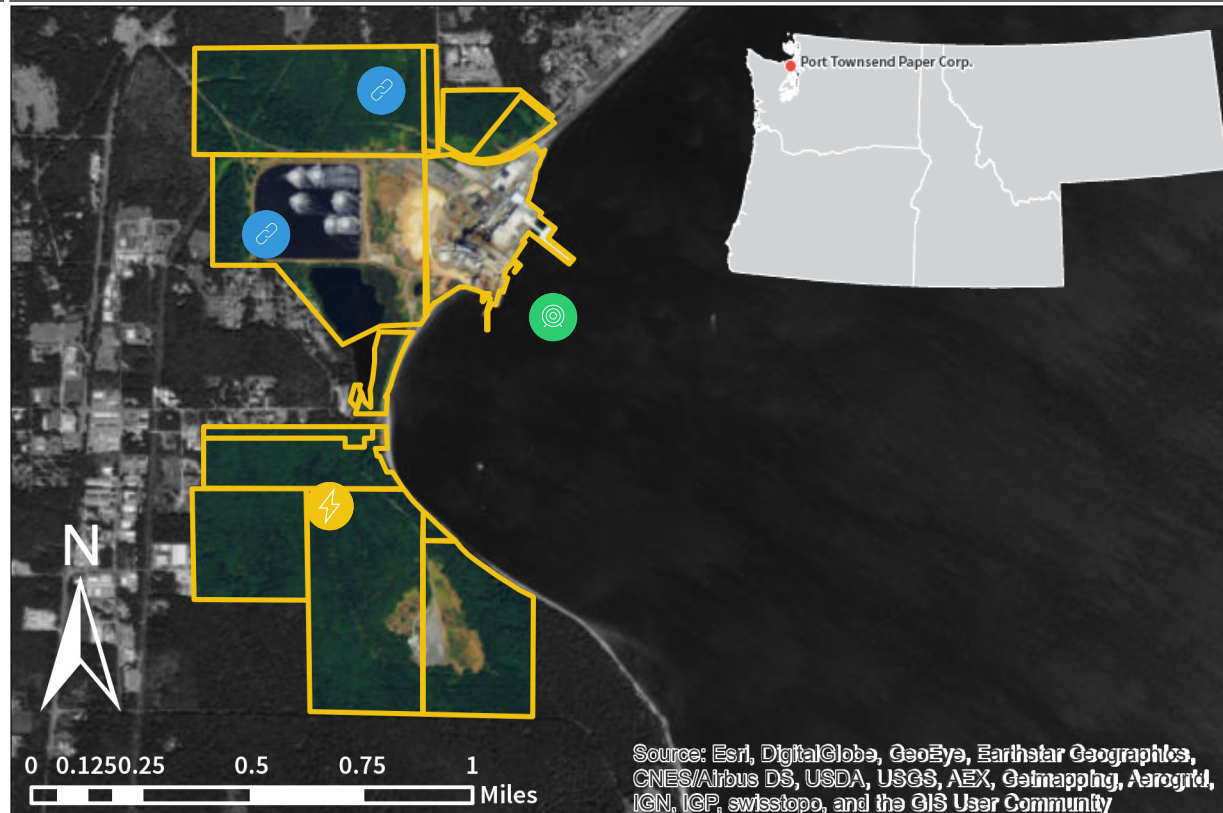
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- Water supply source unstable, mill was at serious threat of shutting down this past summer due to supply concerns

OPPORTUNITIES

- Mill could ship biofuel via barge
- Mill is assessing feasibility of utilizing biochar, a by-product of pyrolysis, to filter stormwater on site and manufacture cleansing units
- New ownership more capable of capital investment

THREATS

- 220 of 448 acres zoned Rural Residential or Designated Forest Land
- Mill in non-compliance with aspects of Clean Water Act and Clean Air Act
- Mill has faced resistance from community including successful efforts to block an expansion to the co-gen plant in 2014



SITE DESCRIPTION

- 448 Acres
- Kraft Process
- Products: Paper and cardboard
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric \$0.064/Kwh
- Natural Gas \$0.555/therm
- Co-gen Boiler Y

TRANSPORTATION

- Road Y 10 Miles
- Rail N
- Barge Y On-site
- I-5: 75 Miles

REGIONAL MARKET

- SEATAC: 100 Miles
- PDX: 205 Miles

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- New Market Tax Incentive



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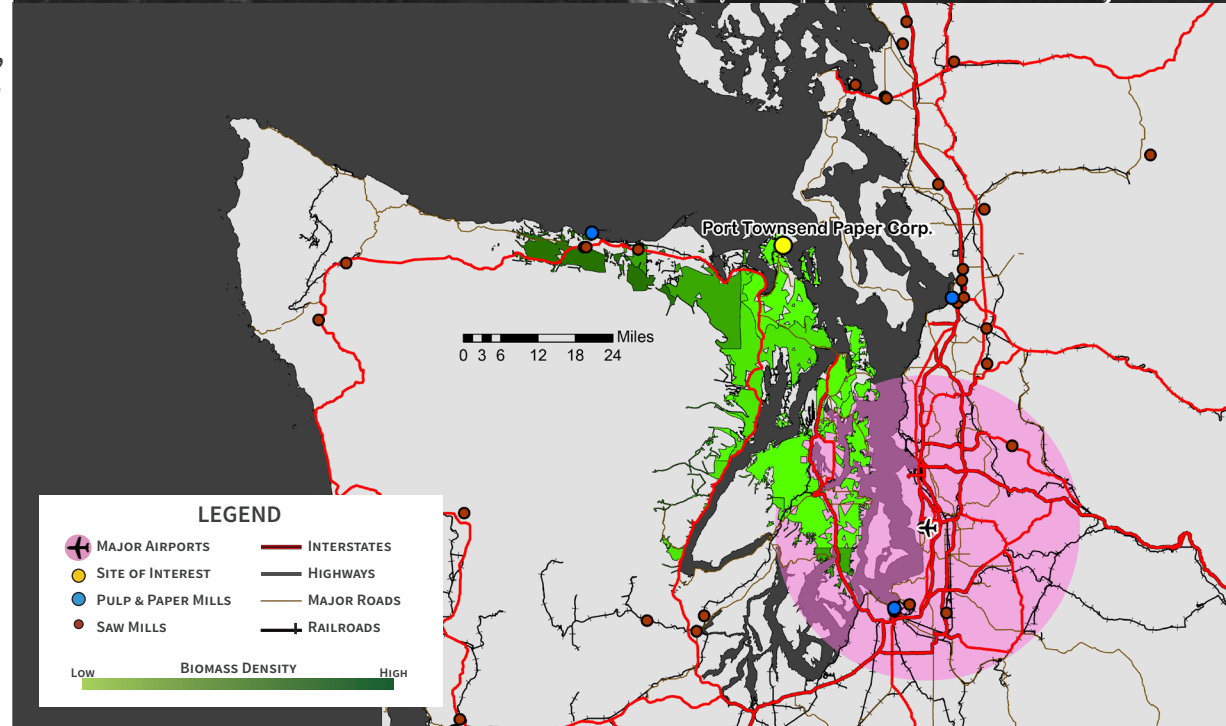
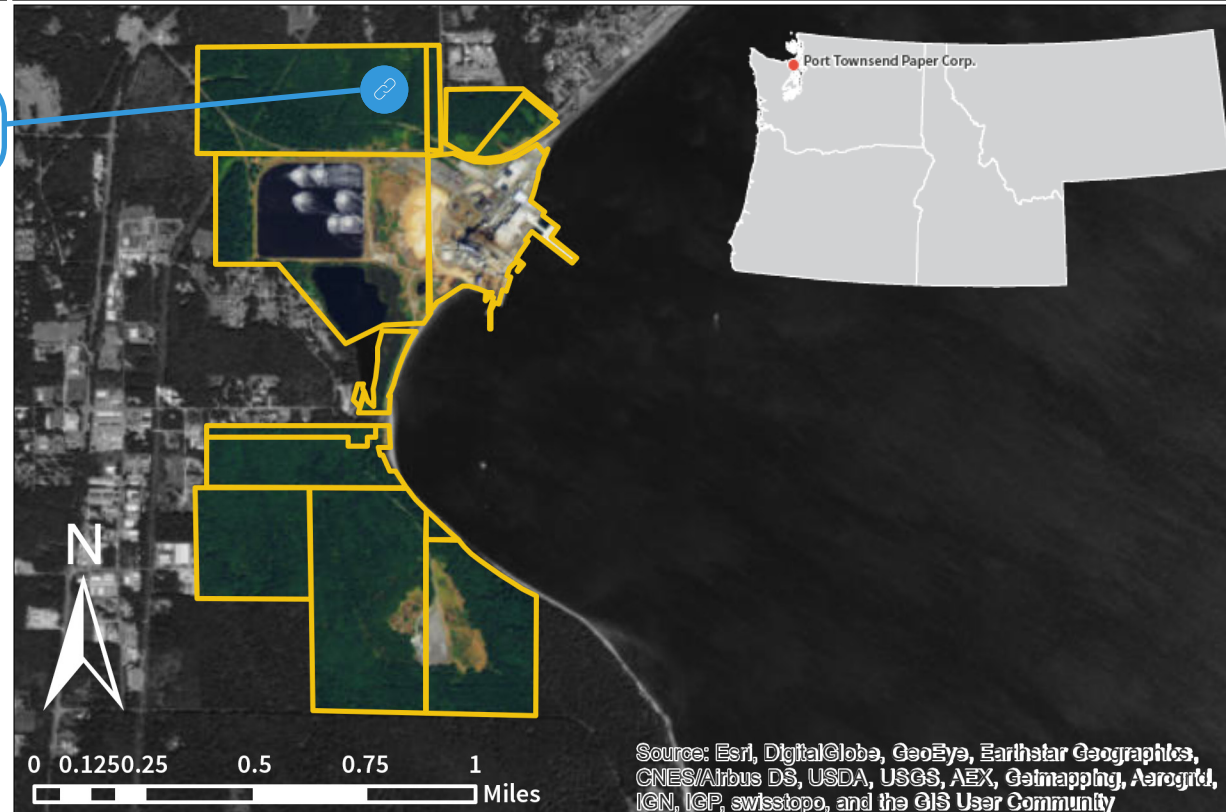
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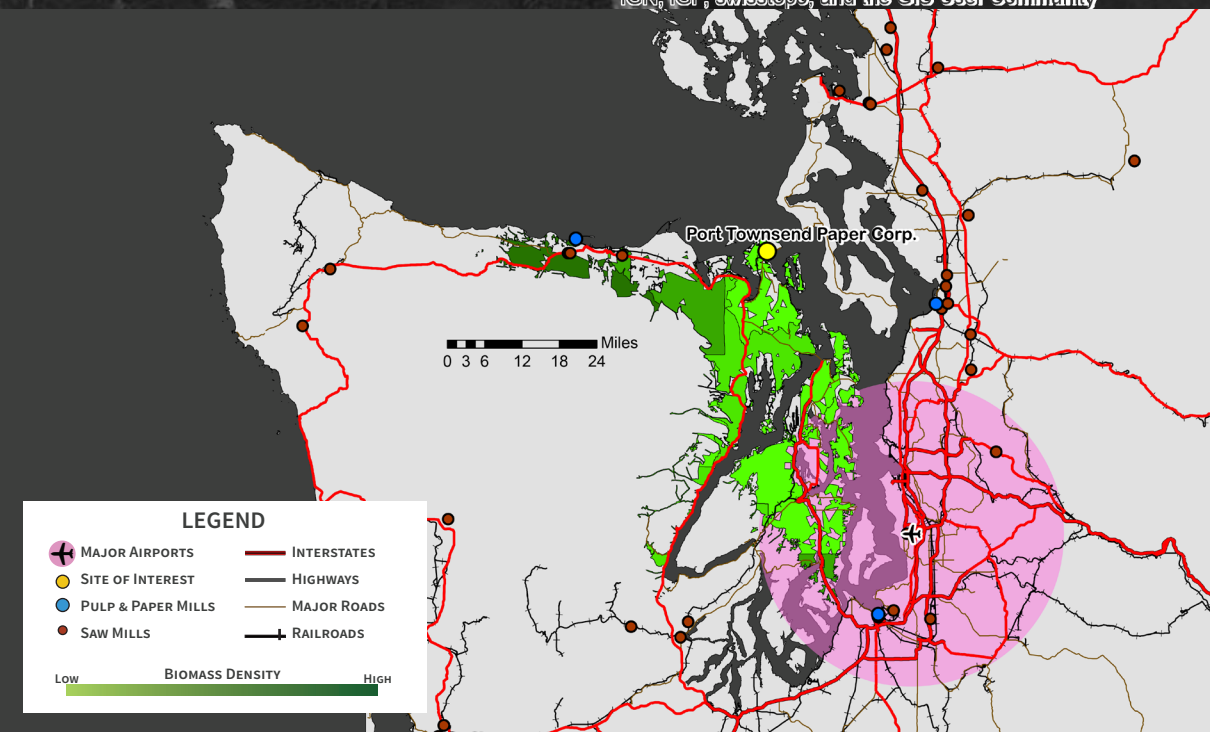
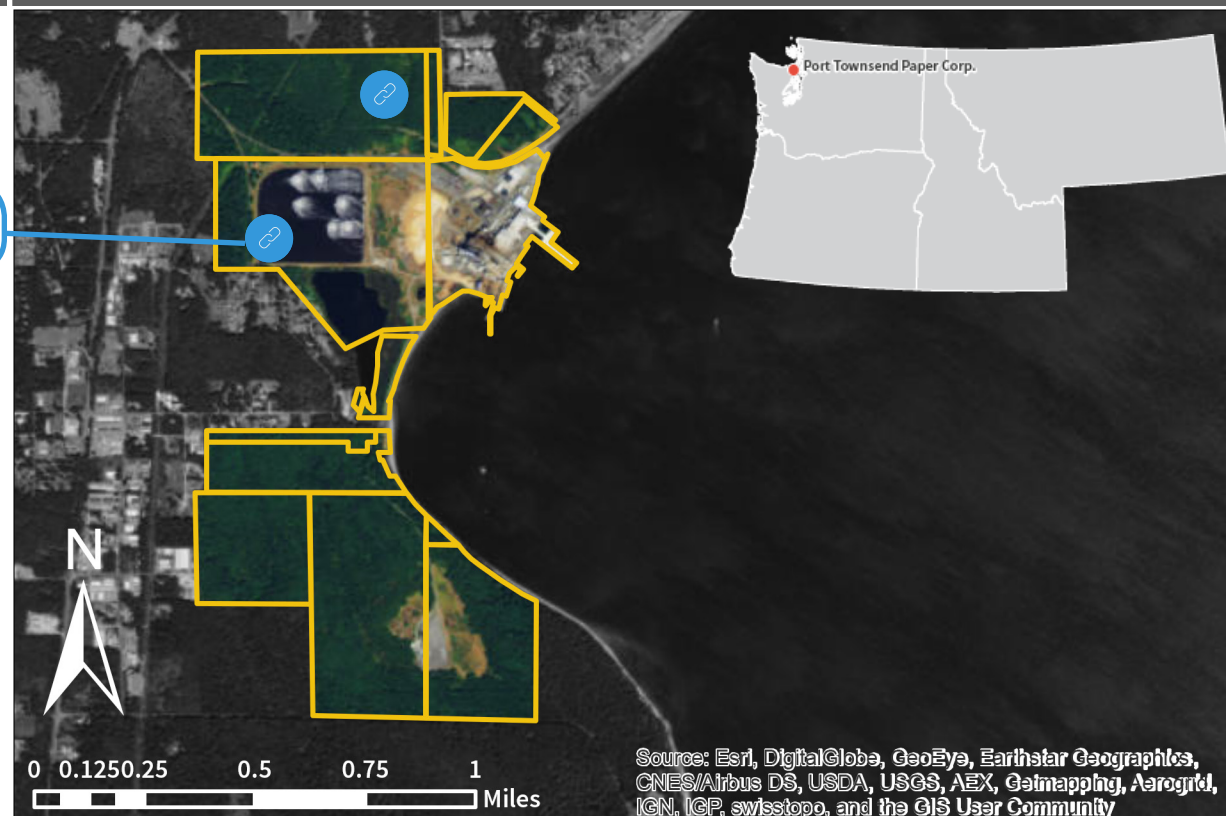
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- Barge Y On-site
- I-5: 75 Miles

REGIONAL MARKET

- SEATAC: 100 Miles
- PDX: 205 Miles

BIOMASS QUANTITIES

- 30 Minutes: 6K BDT
- 60 Minutes: 30K BDT
- 90 Minutes: 60K BDT

INCENTIVES

- New Market Tax Incentive



STRENGTHS

- Mill owns 150 acres of HI zoned greenfield adjacent to existing infrastructure
- Large (33 acre) industrial wastewater treatment plant on site
- Able to receive feedstock via barge

WEAKNESSES

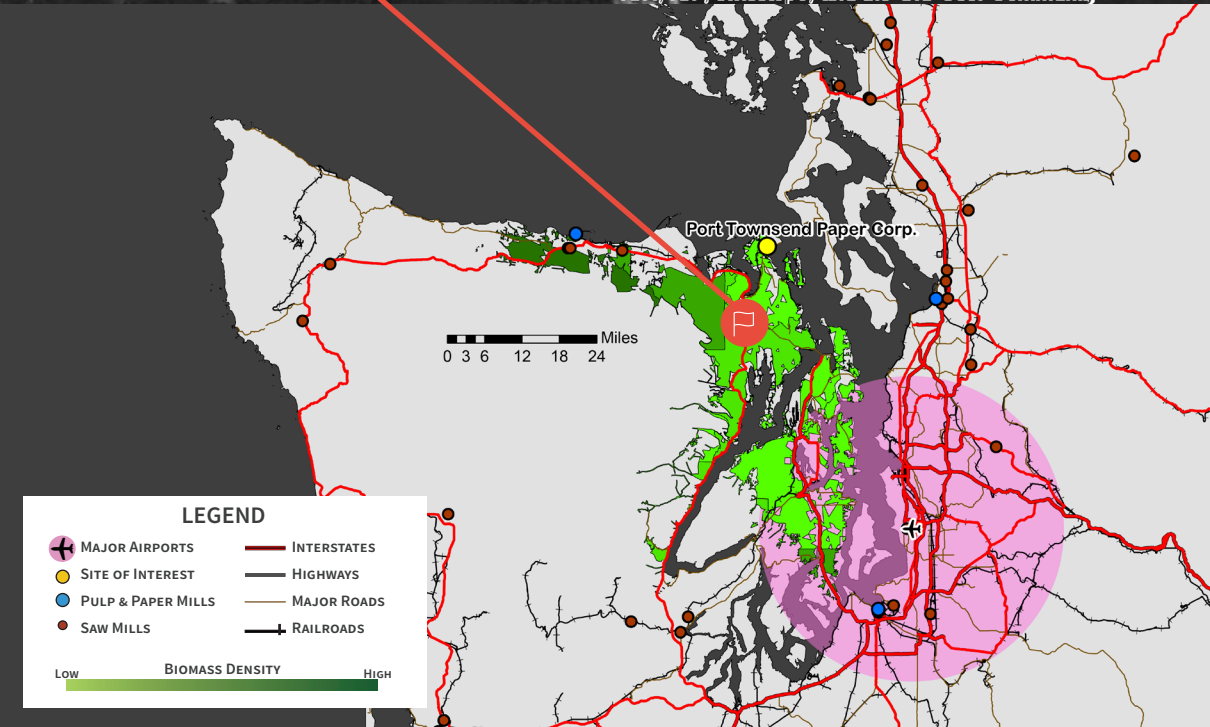
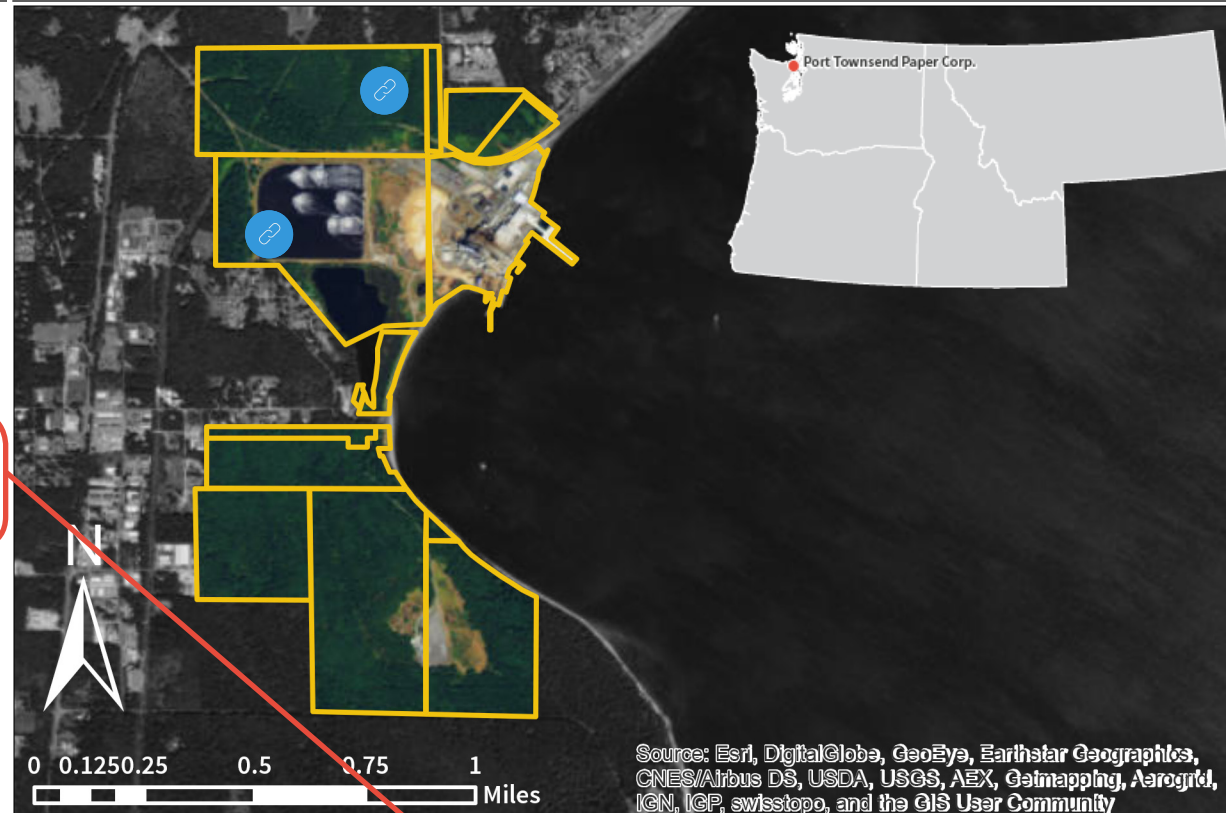
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- New ownership more capable of capital investment

THREATS

- 220 of 448 acres zoned Rural Residential or Designated Forest Land
- Mill in non-compliance with aspects of Clean Water Act and Clean Air Act
- Mill has faced resistance from community including successful efforts to block an expansion to the co-gen plant in 2014



SITE DESCRIPTION

- 448 Acres
- Kraft Process
- Products: Paper and cardboard
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric \$0.064/KwH
- Natural Gas \$0.555/therm
- Co-gen Boiler Y

TRANSPORTATION

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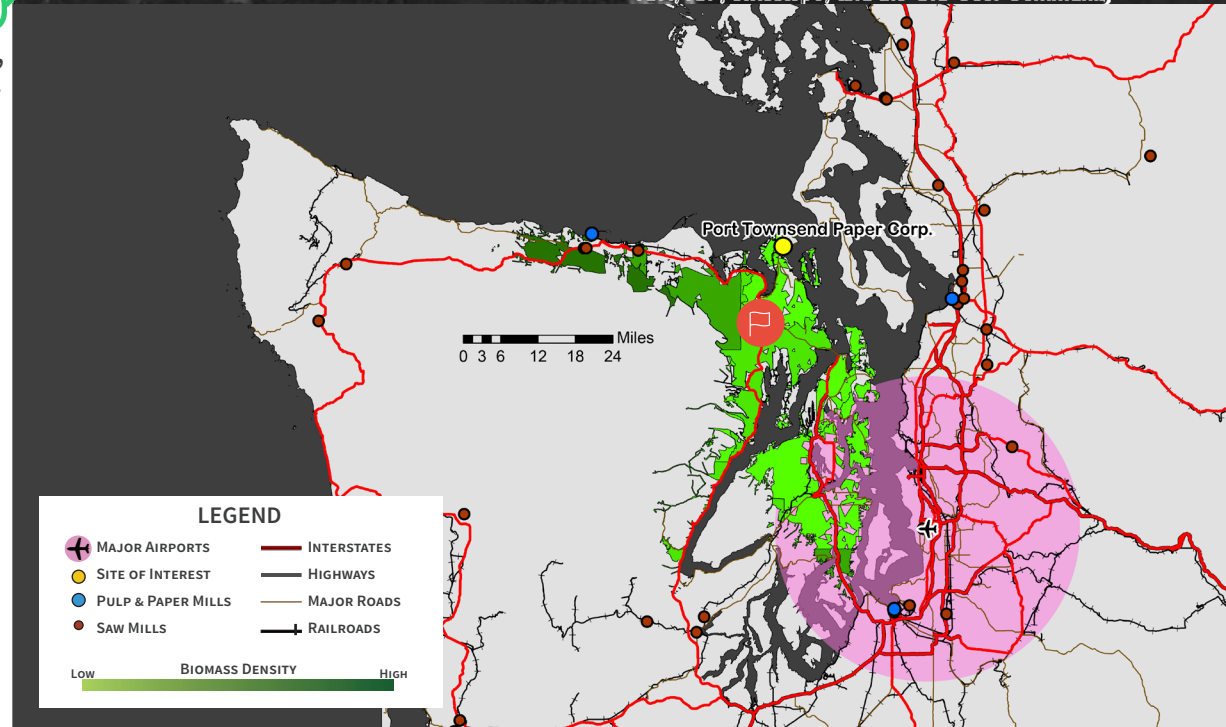
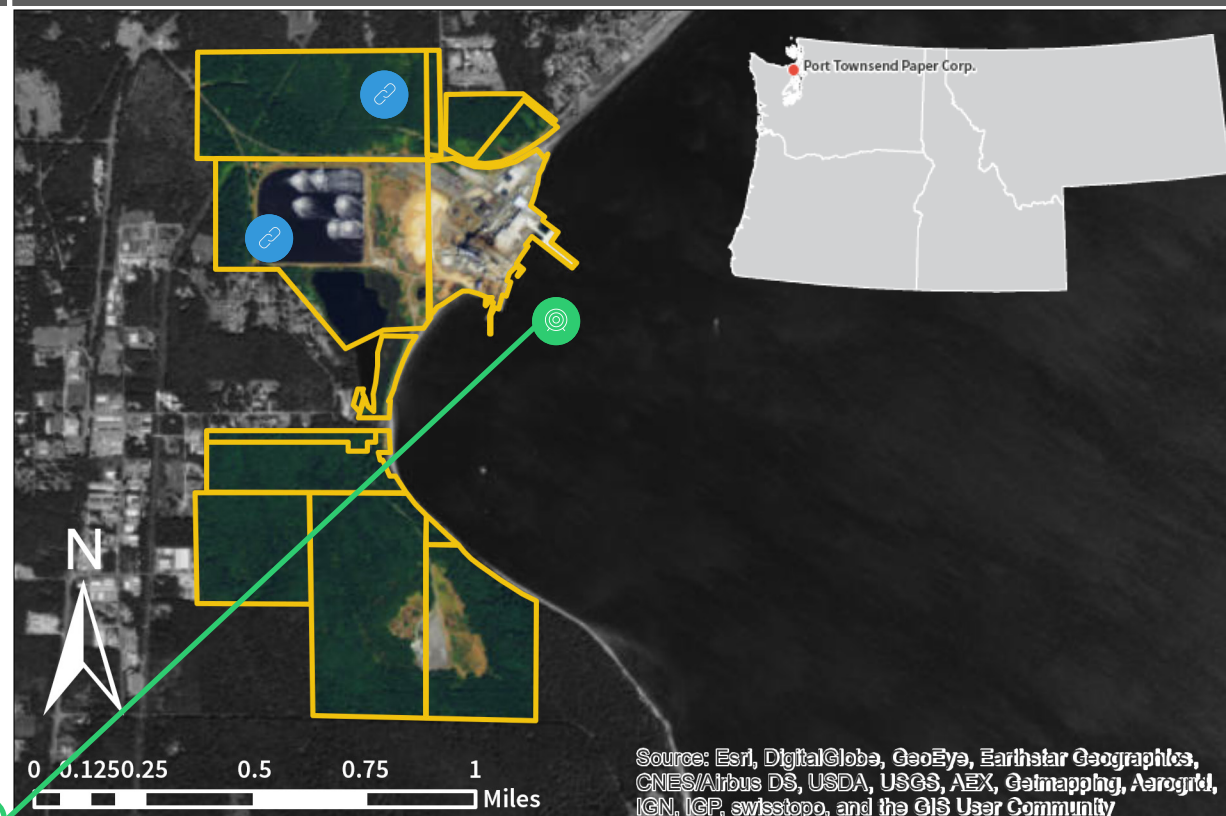
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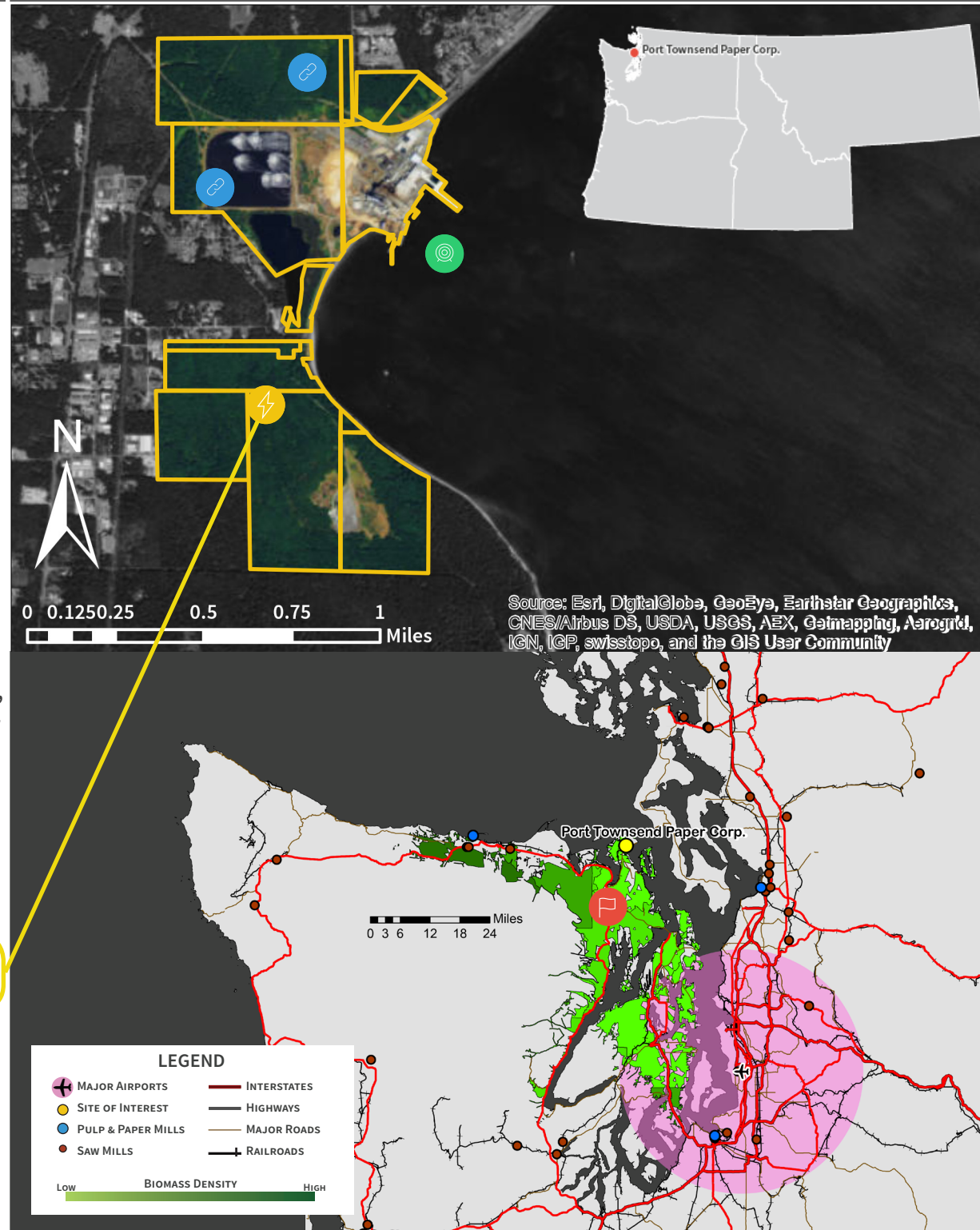
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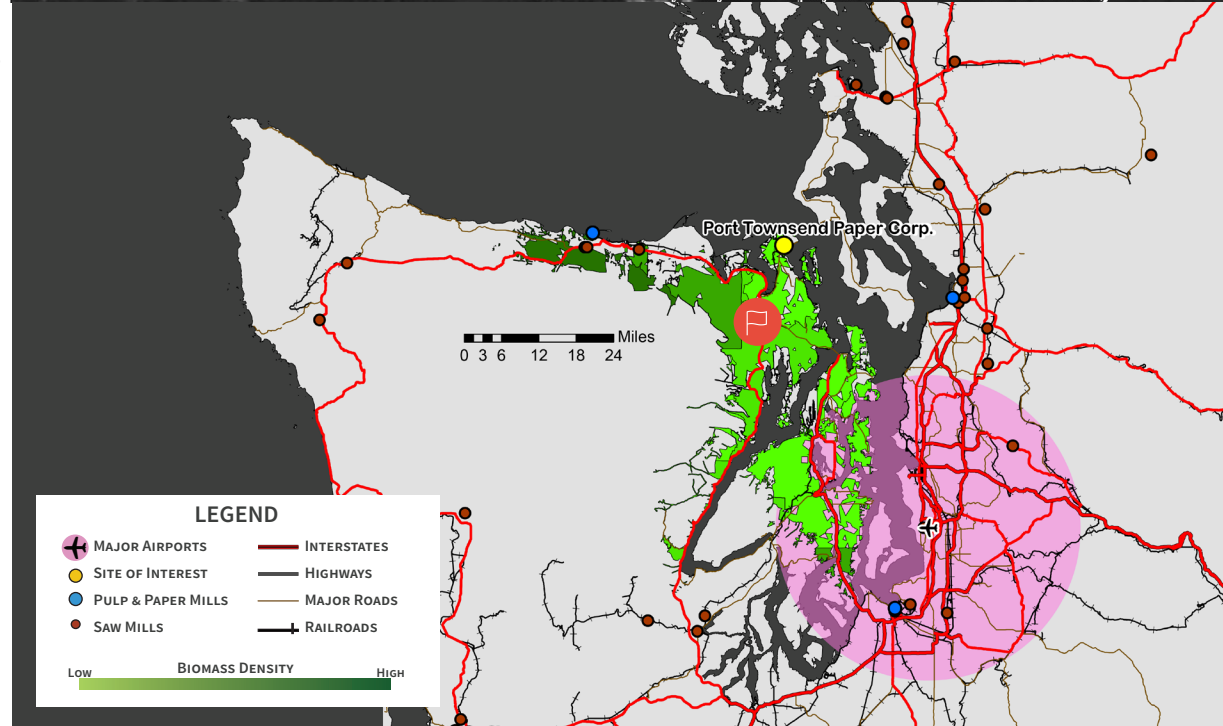
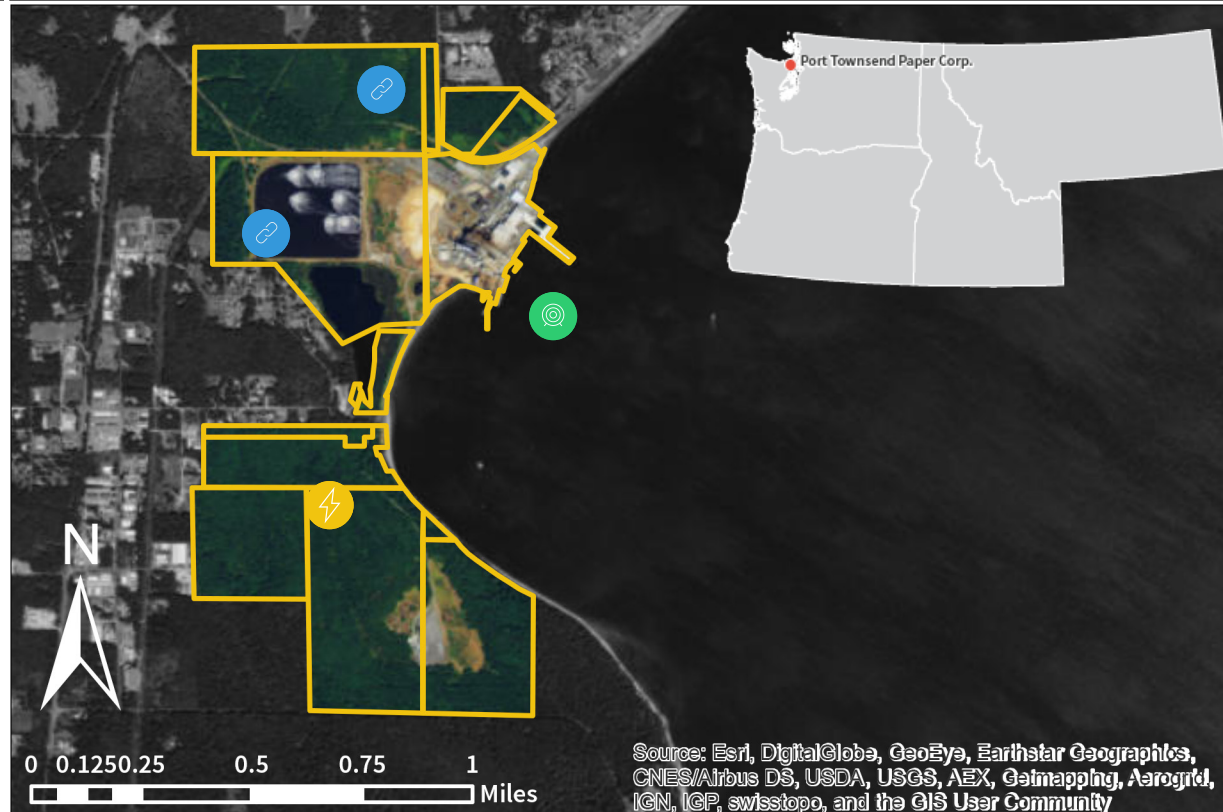
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Nippon Paper Industries

PORT ANGELES, CLALLAM COUNTY, WA



STRENGTHS

- Company has invested over \$300 million in this plant since 1988.
- New co-gen facility outputs ~15 MW of electricity with eventual output of 20 MW.
- Existing relationships with forest residual shipping companies.

WEAKNESSES

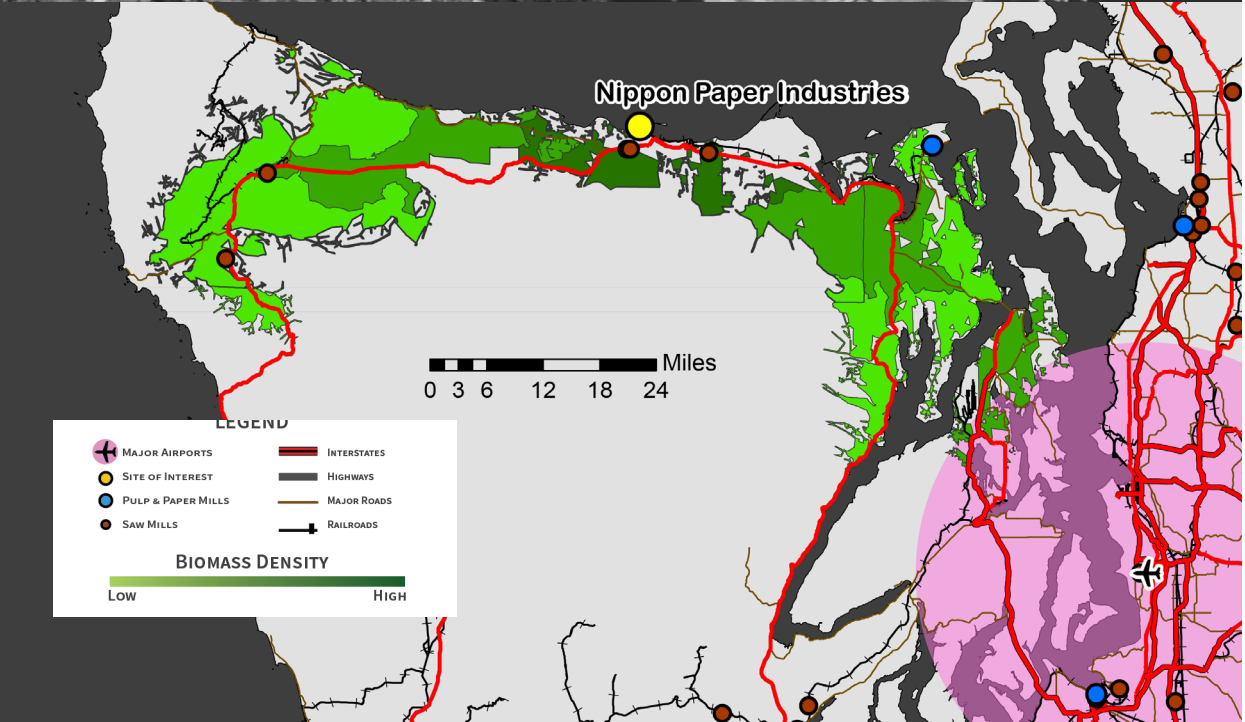
- New \$81 million co-gen facility requires 180,000 BDT of biomass per year.
- Ongoing multi-million dollar lawsuits with co-gen contractor.
- Site confines (75 acres) too small for pilot plant addition.

OPPORTUNITIES

- Located adjacent to the Port of Port Angeles with existing relationships with shipping companies.
- 3-mile proximity to Fairchild International Airport with capacity for 737 aircraft.

THREATS

- Only 100,000 BDT per year available within 90 min.
- Only greenfield nearby is owned and protected by the Lower Elwha Klallam Tribe.



SITE DESCRIPTION

- 75 Acres
- Thermo-mechanical Process
- Products: Lightweight Mechanical Paper
- Air Permit: Y
- NPDES Permit: Y

UTILITIES

- Electric \$0.0429/KwH
- No Natural Gas Availability
- Co-gen boilers onsite - Y

TRANSPORTATION

- Road Y 2 Miles
- Rail N NA
- Barge Y On Site
- I-5 122 Miles

REGIONAL MARKET

- SEATAC: 96 Miles
- PDX: 232 Miles

BIOMASS QUANTITIES

- 30 Minutes: 10K BDT
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INCENTIVES

- WA State Biofuels Production Tax Incentives

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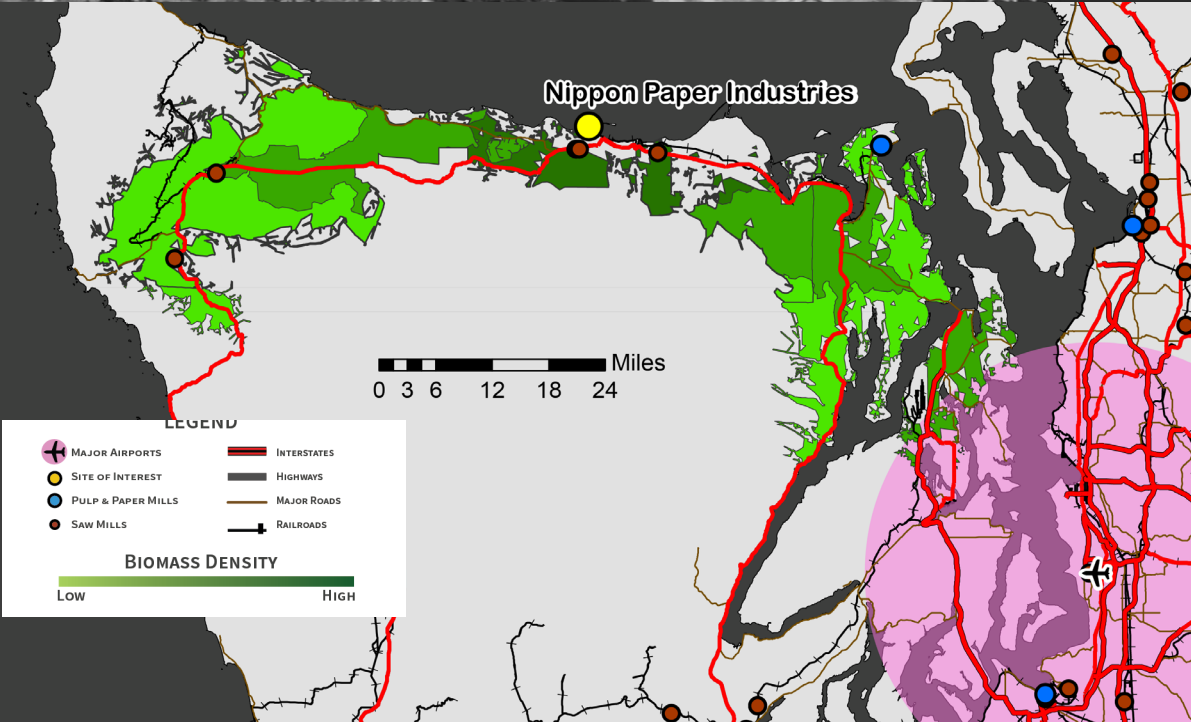
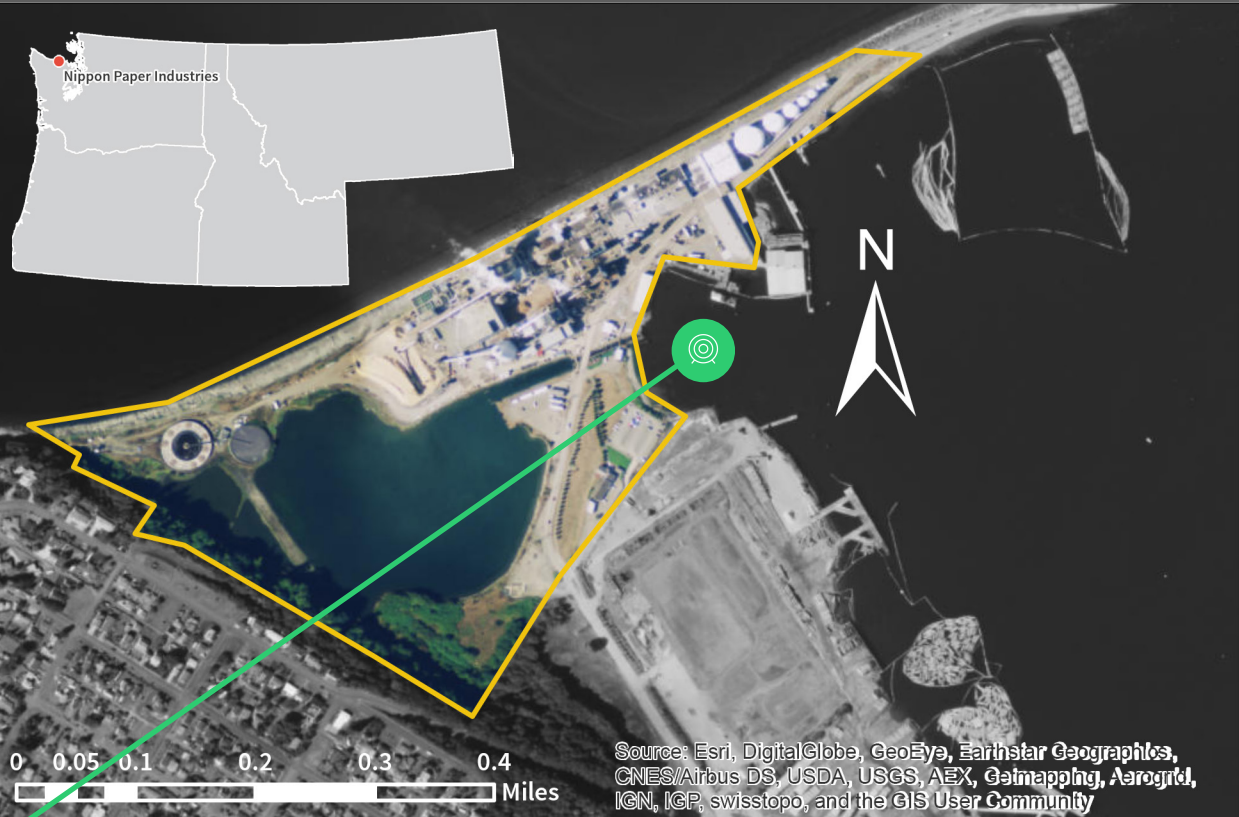
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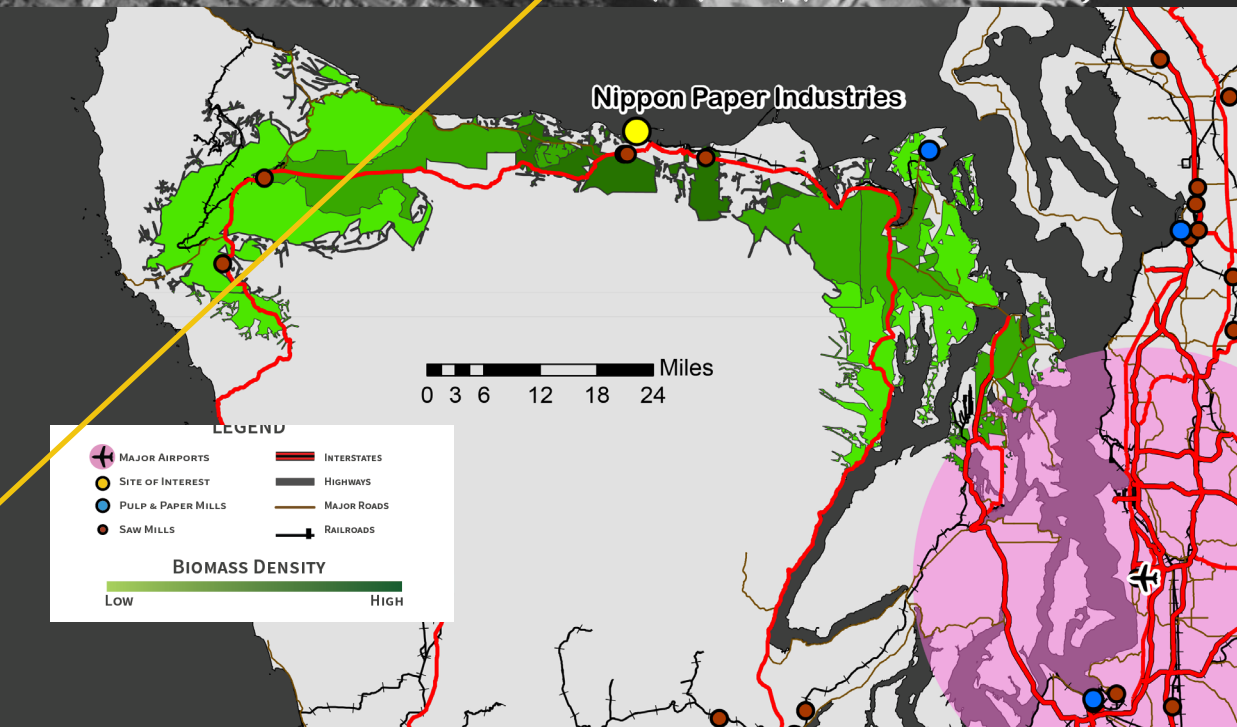
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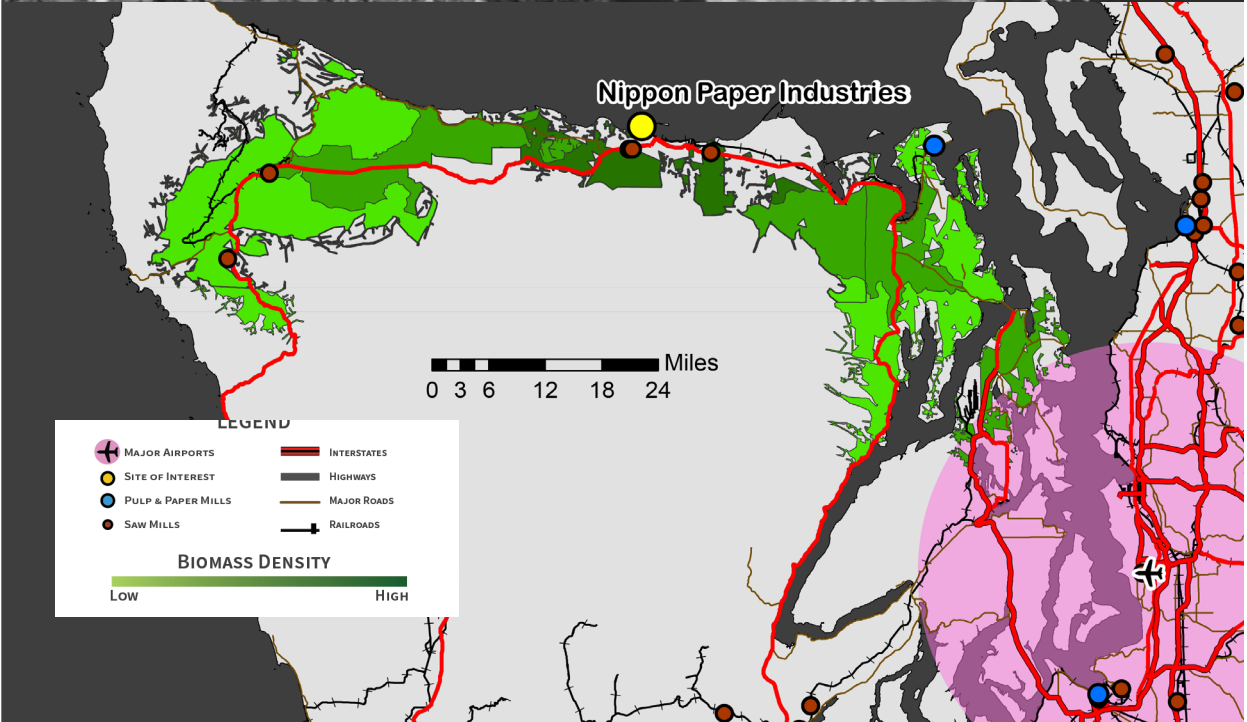
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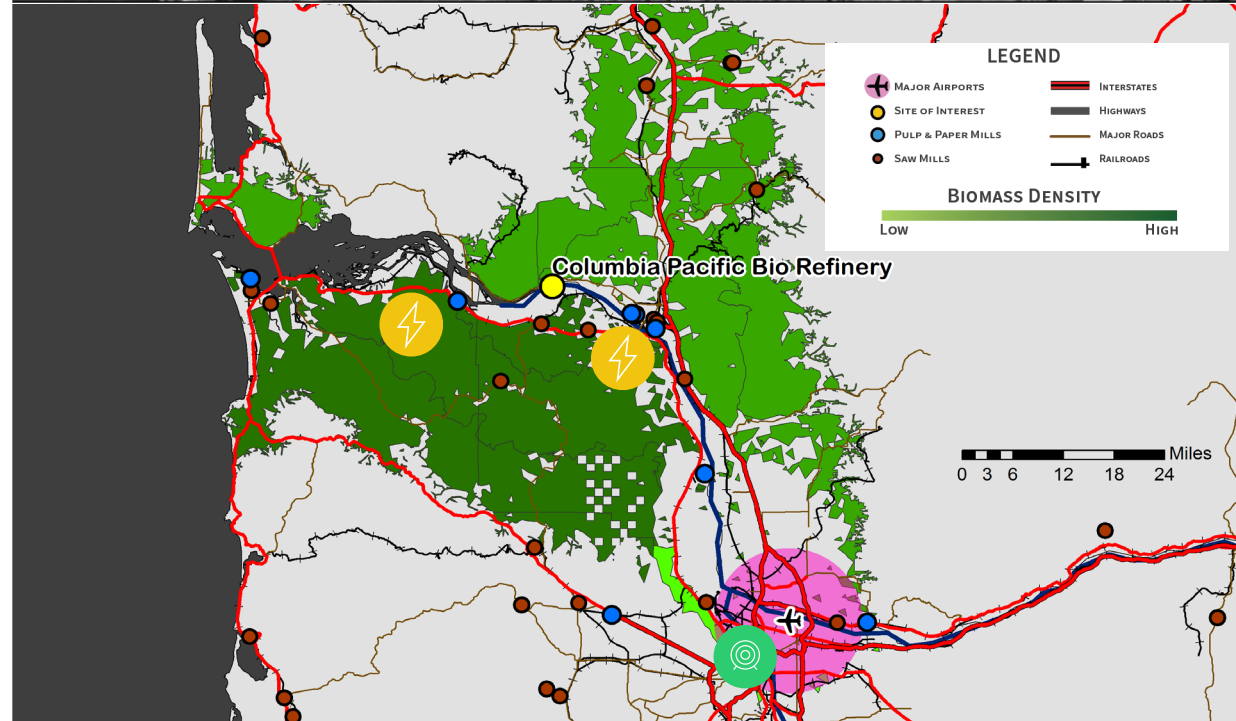
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OPPORTUNITIES

- Industrial park owns 800 available acres; none zoned industrial
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- Potential link to regional refiners
- Limited West Coast pipeline infrastructure; this site could be "virtual" pipeline for industrial park

THREATS

- Strong environmental NGOs contested air permit
- Potential biomass competition from three operating paper mills within 20 miles



SITE DESCRIPTION

- 44 Acres
- Crude Export & Ethanol Biorefinery
- Products: Crude Oil (former Ethanol)
- Air Permit: Y
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UTILITIES

- Electric ~\$0.0483/KwH
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TRANSPORTATION

- Road Y <1 Mile
- Rail Y BNSF On Site
- Barge Y 1,200' dock
- I-5 20 Miles

REGIONAL MARKET

- SEATAC: 138 Miles
- PDX: 64 Miles

BIOMASS QUANTITIES

- 30 Minutes: 30K BDT
- 60 Minutes: 230K BDT
- 90 Minutes: 600K BDT

INCENTIVES

- Enterprise Zone Tax Exemption
- Alternative Fuel Loans
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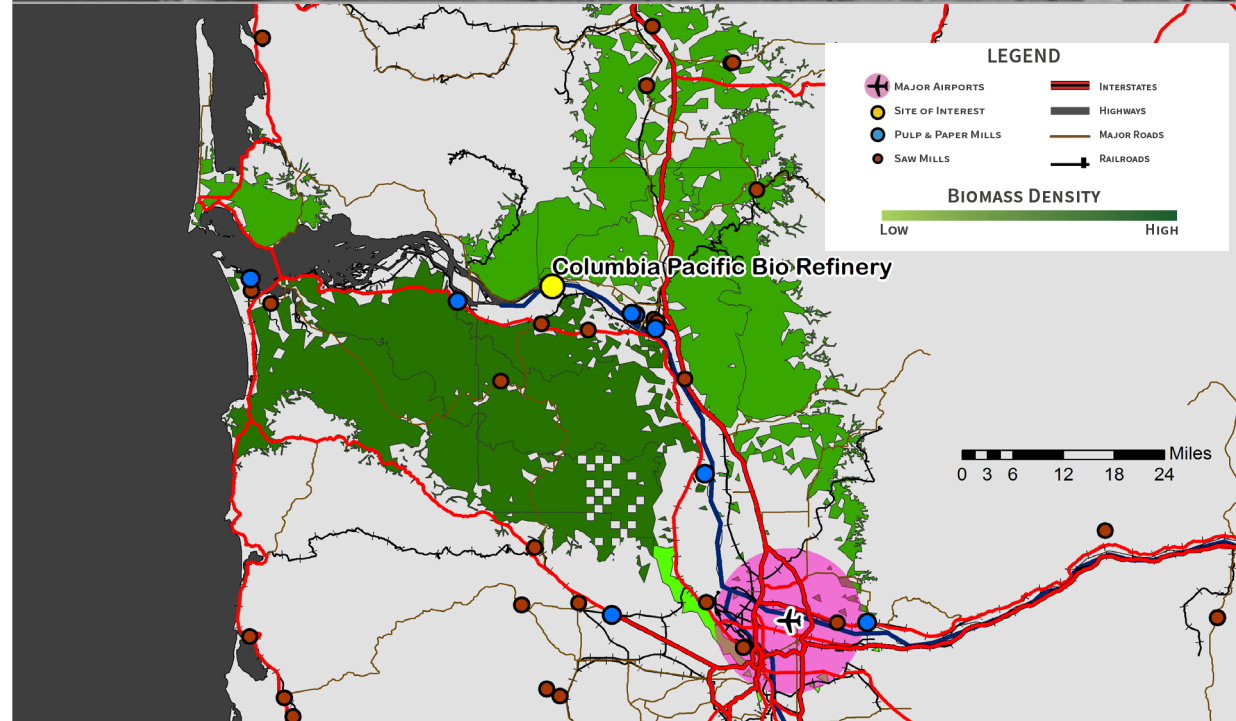
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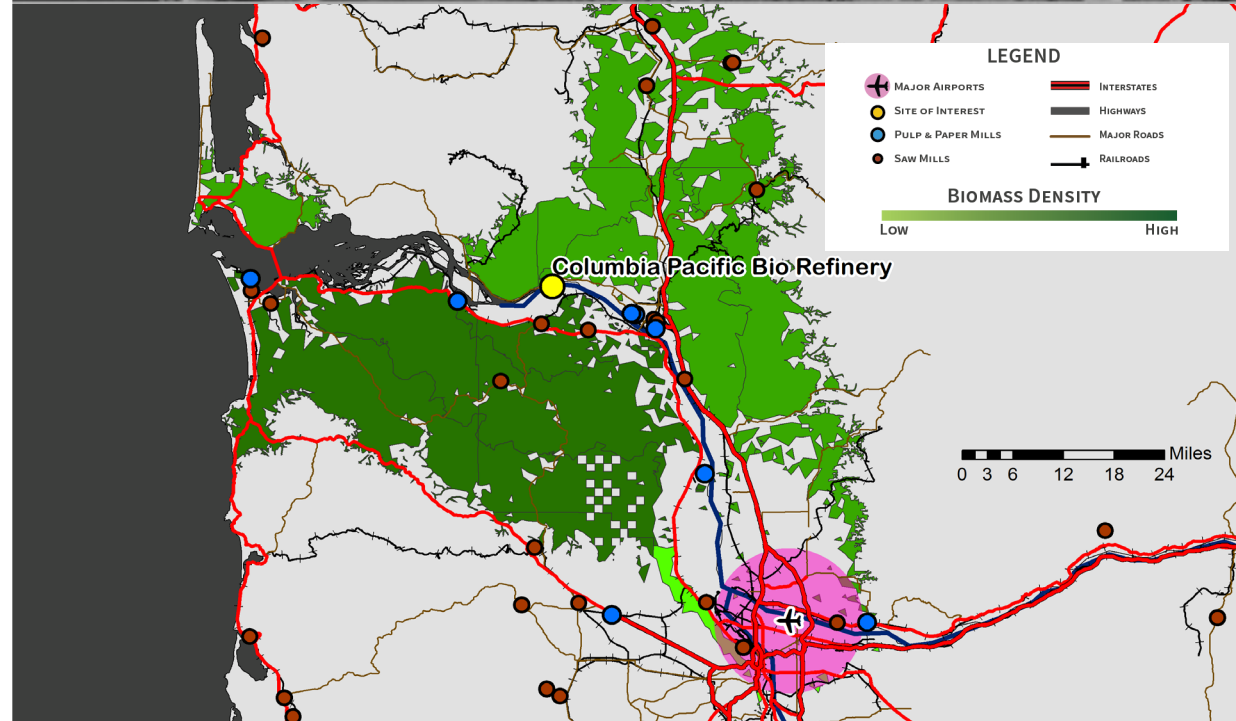
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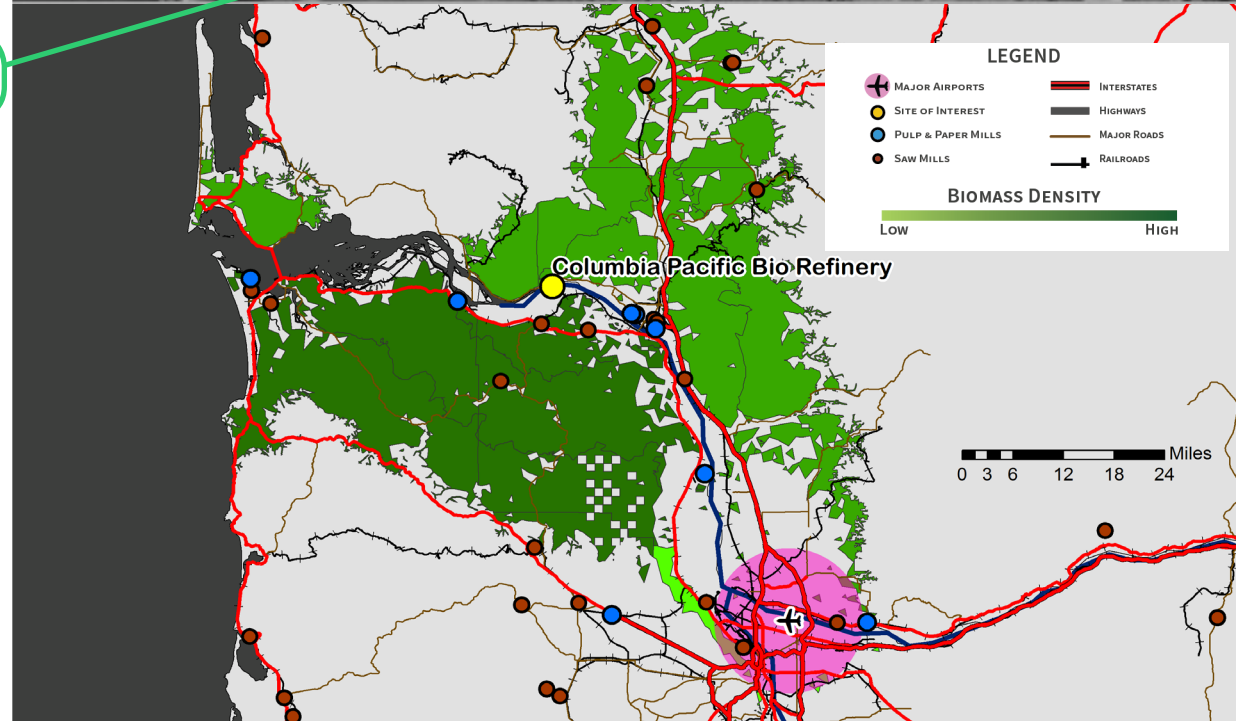
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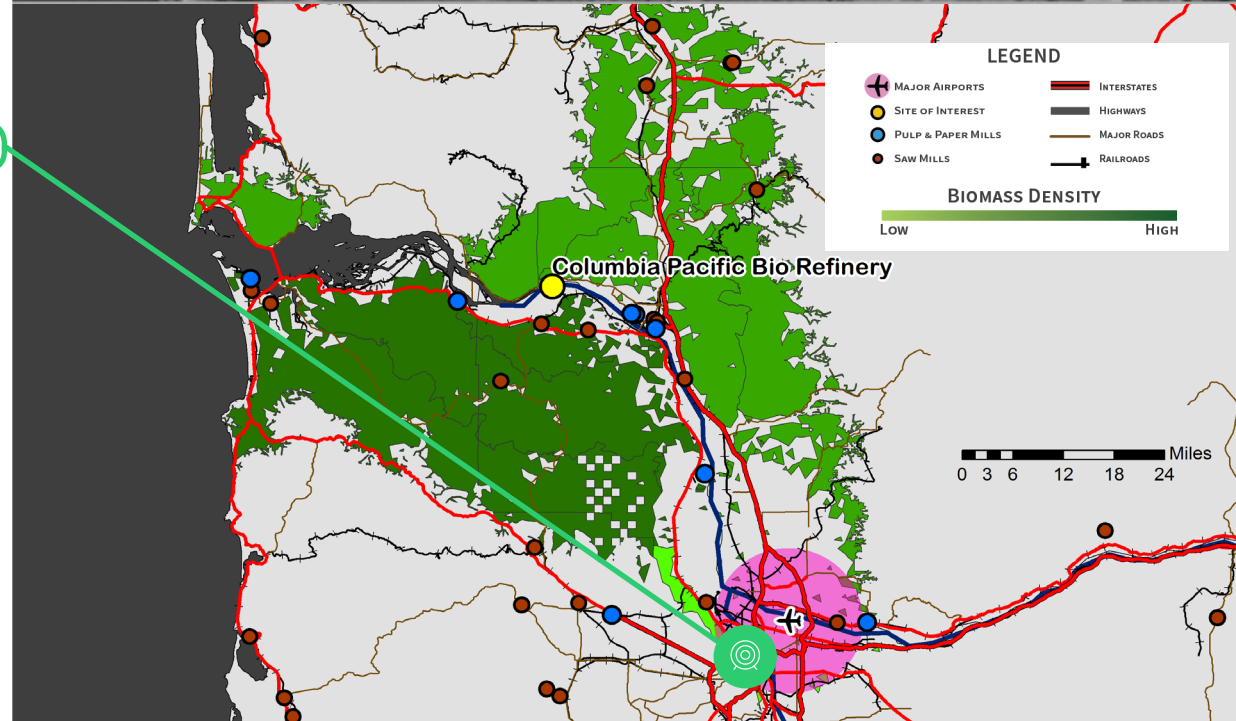
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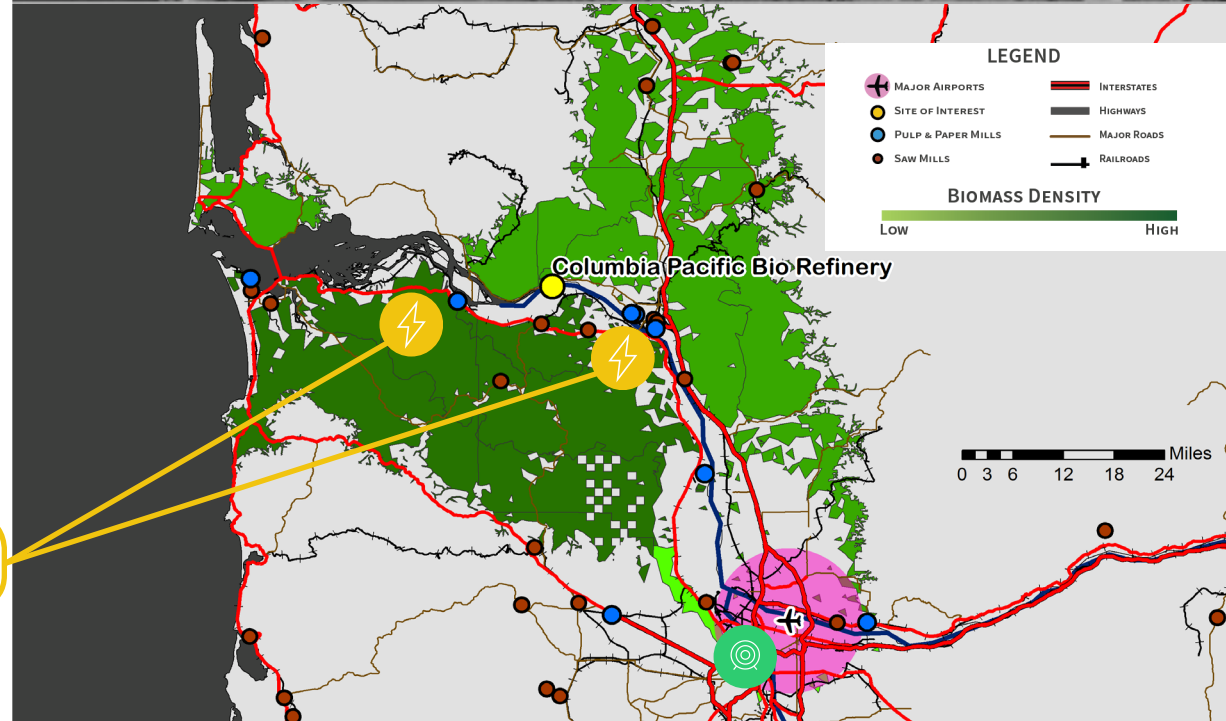
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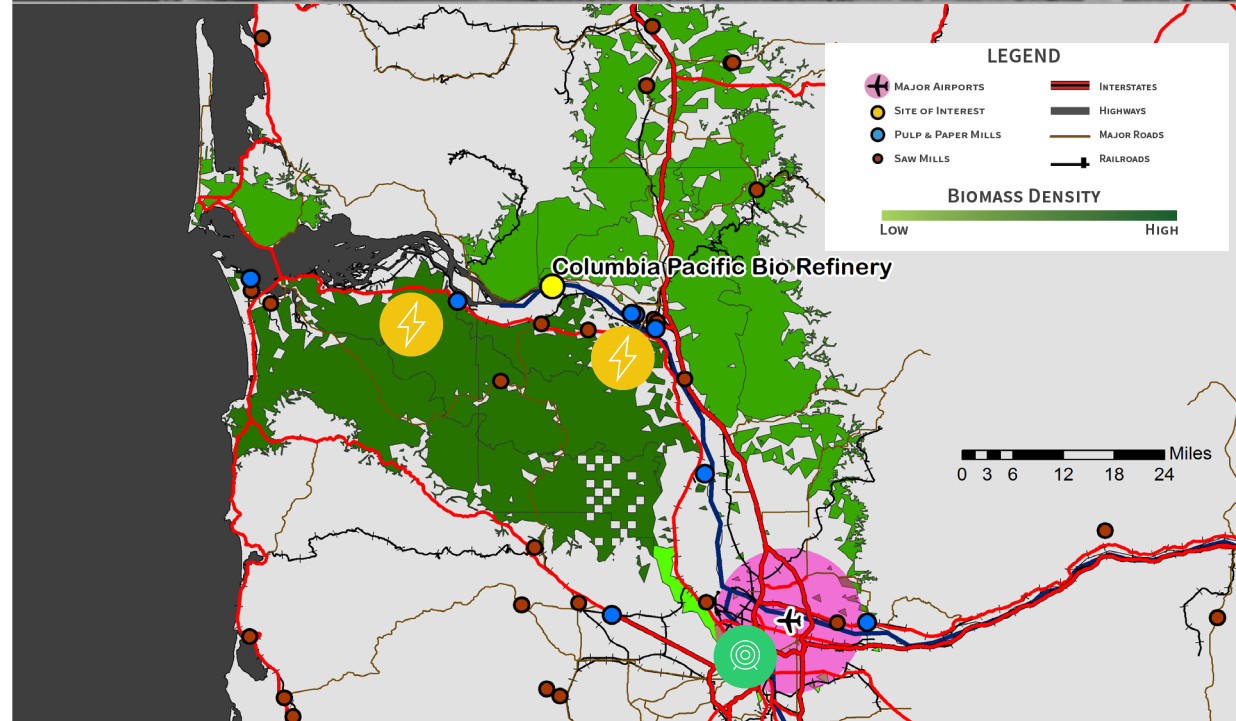
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- Biofuel Production Tax Exemptions

PILOT PLANT COMPARISON CHART

	Biomass (BDT within 90 Minutes)	Developable land (acres)	Distance to PDX (miles)	Distance to SEATAC (miles)	Distance to I5 (miles)
GP Wauna	700,000	455	73	146	32
WestRock Tacoma	370,000	0	145	21	2
GP Camas	425,000	350	12	167	14
GP Toledo	340,000	94	144	292	58
Cosmo Specialty	578,000	420	143	97	50
Weyerhaeuser LV	760,000	26	54	116	6
Kapstone	760,000	50	39	122	5
WestRock Newburg	510,000	0	48	190	13
International	300,000	33	130	270	6
CP Halsey	230,000	350	103	252	5
Port Townsend	60,000	150	205	100	75
Nippon	100,000	0	232	96	122
Columbia Pacific	600,000	15	64	138	20

NOTES:

The Site Comparison Chart does not display all of the information needed to adequately select a site.

The chart is a resource that can help compare data easily represented in a numerical form.