

## TUGS AND TOWS

Tug and Barge



## FEDERAL

Yaquina



- About 2,600 commercial vessel trips per year (less than 4% require bridge lift)
- More than 185,000 recreational activity days per year (less than 0.4% require bridge lift)
- I-5 liftspan opened for vessels an average of 209 times/year over last 5 years (and 459 times per year when counting maintenance and test lifts)

## MARINE CONTRACTORS

Derrick No. 24



Dredge



## MARINE INDUSTRIES AND FABRICATORS

Fabricator shipment



## RECREATIONAL

Sailboat



## PASSENGER/CRUISE

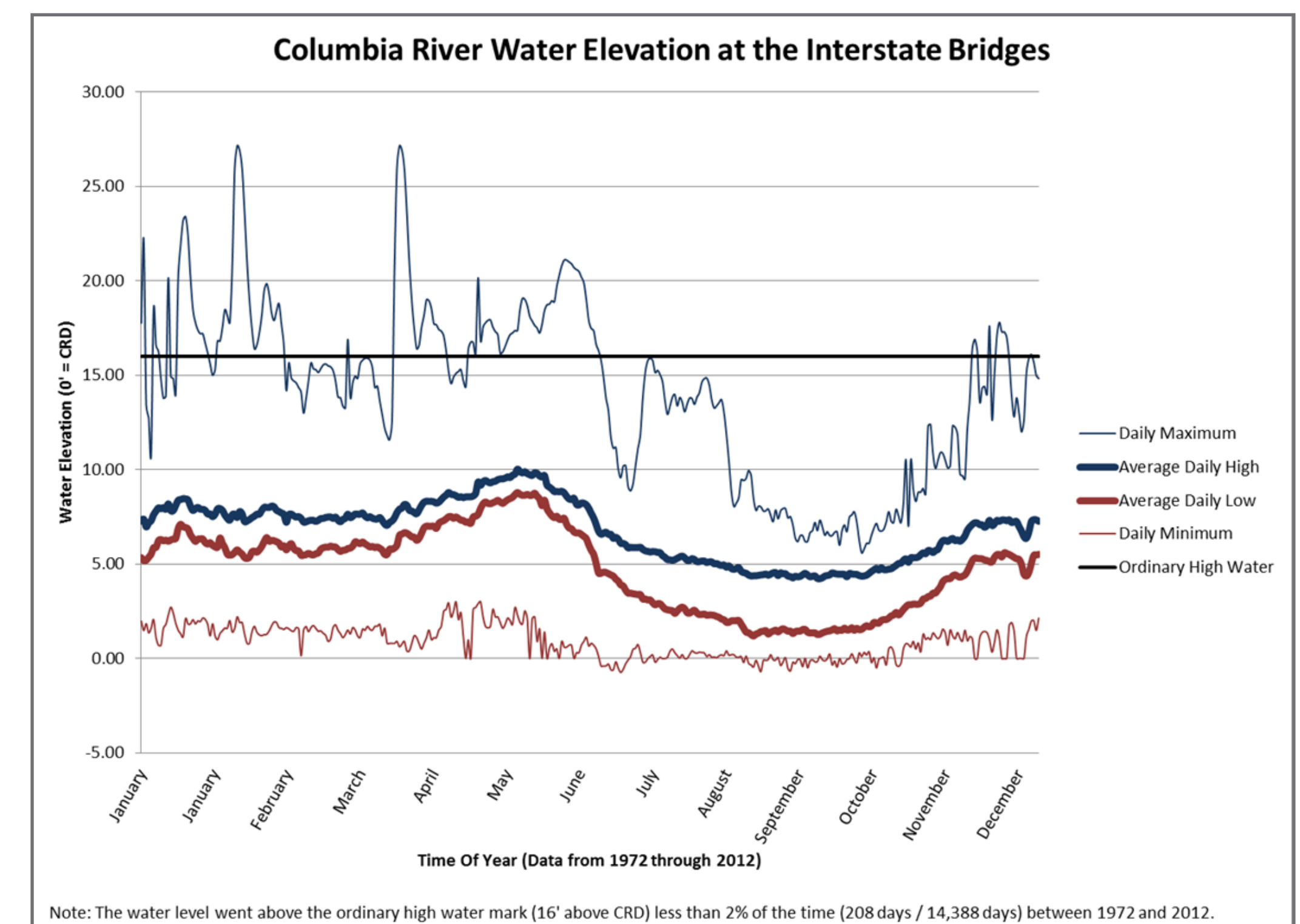
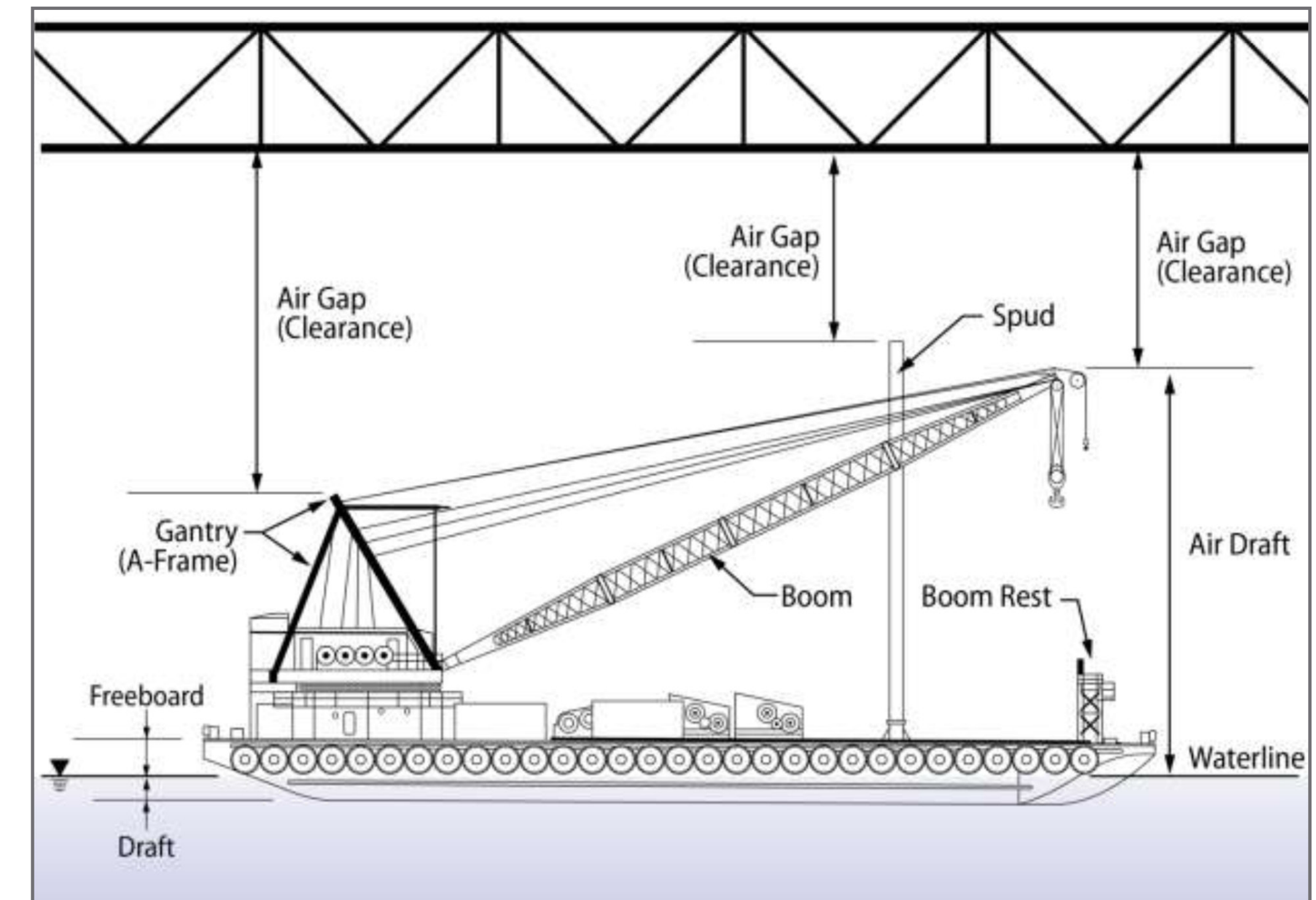
Lady Washington



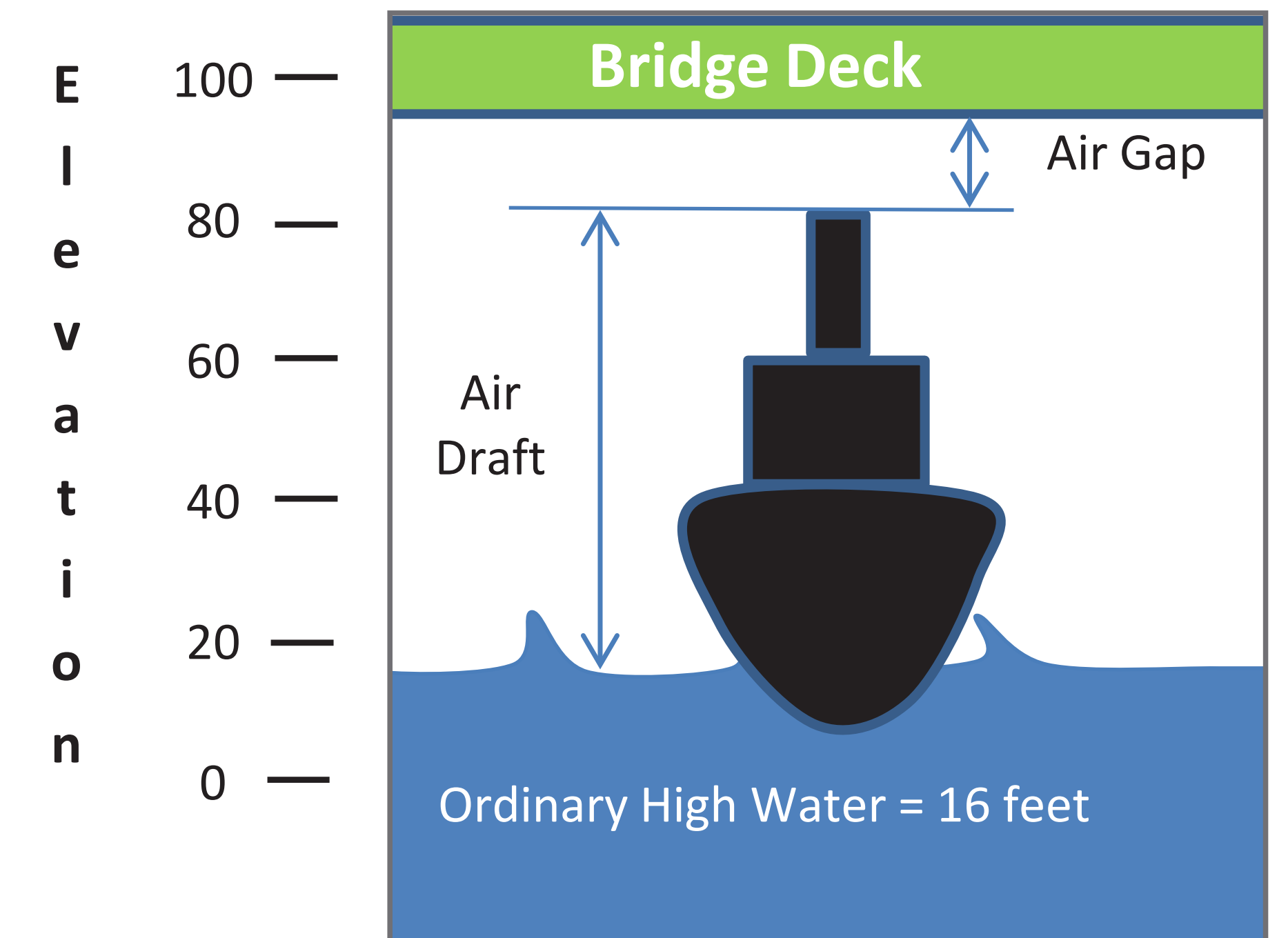
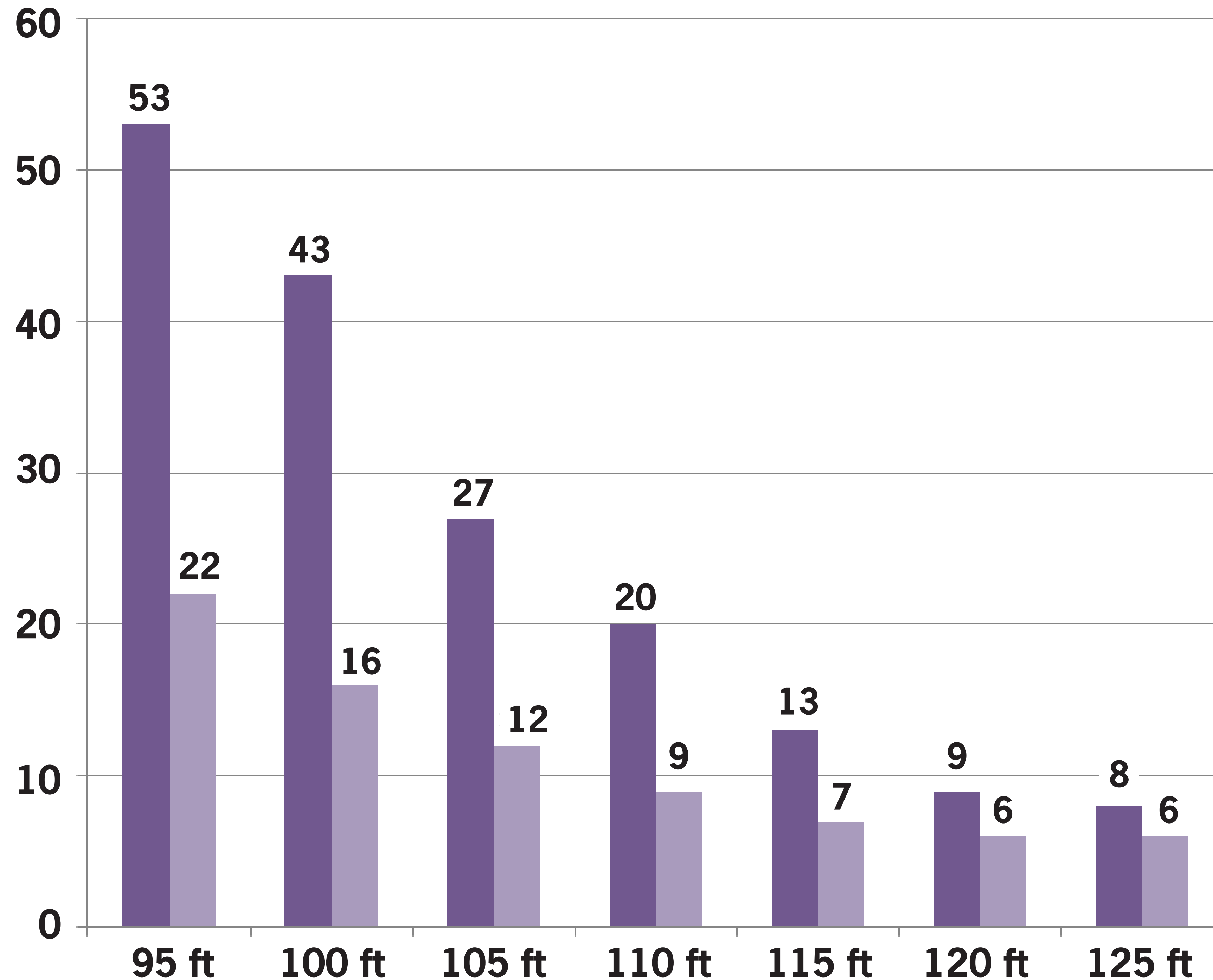


# What conditions affect river passage?

- Vessel height (air draft)
- How often vessel travels
- When a vessel travels
- The safety “air gap”
- The river water level



# Summary of vessels affected by bridge heights



- Number of Vessels that can not pass with a 10 ft. air gap when water level exceeds 16 ft. (occurs 2% of the time)
- Number of Vessels that can not pass with a 5 ft. air gap when water level exceeds 8.65 ft. (occurs 20% of the time)



# Example of Vessel Passage Impact: *DB Lucy*

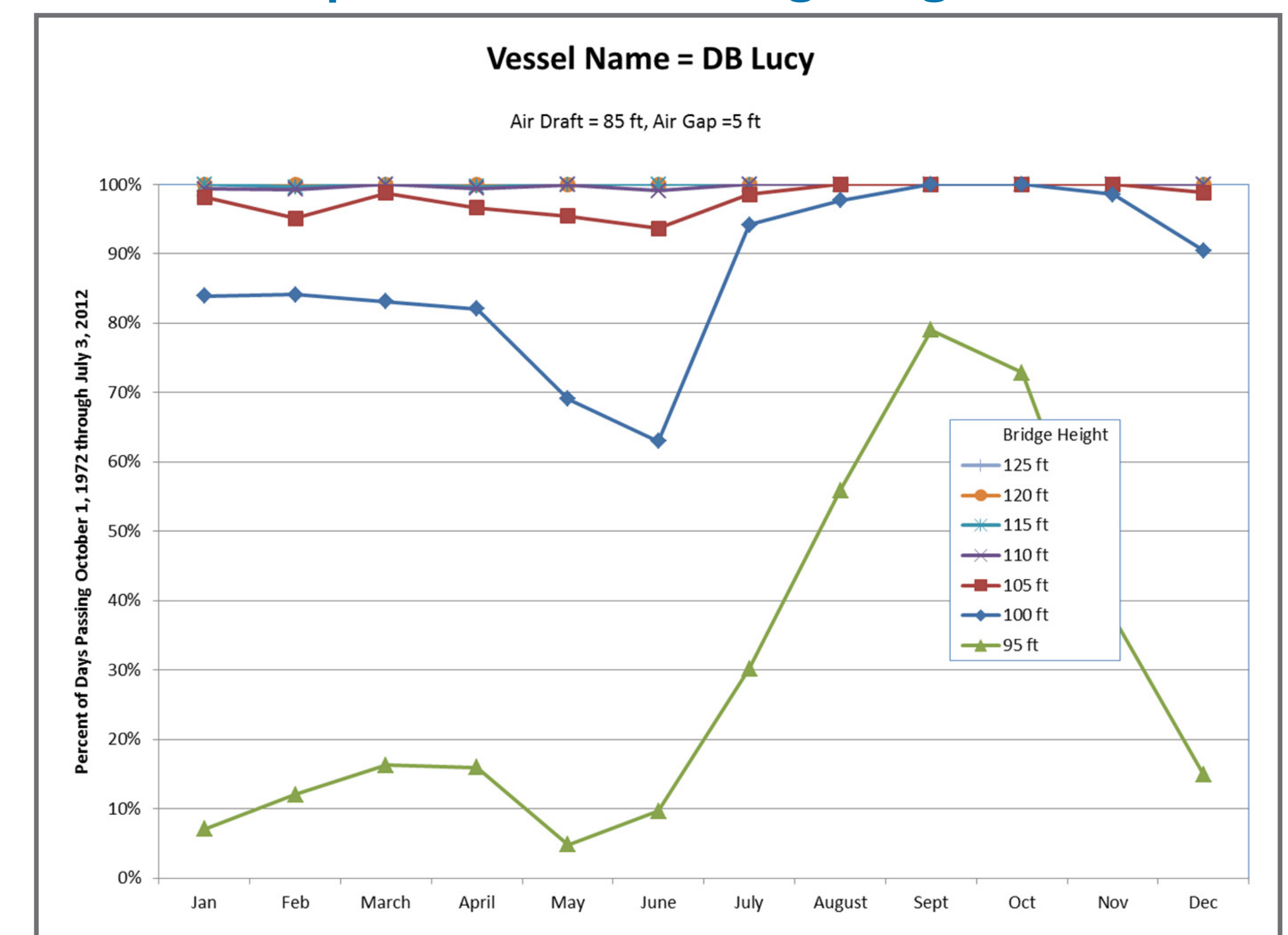
## VESSEL

The *DB Lucy*, Derrick Barge with tall spuds

- Air draft of 85 feet
- Reported frequency of transit under the I-5 bridge:
  - ▶ Varies. One time per month all months of the year
- Passage restrictions (with a 5-foot air gap):
  - ▶ **95 ft:** Can pass 5 to 15% of days Dec-June; 30-80% July-Nov
  - ▶ **100 ft:** Can pass over 80% of time for 10 months of year and 63-69% of time during highest water months of May and June
  - ▶ **105 ft:** Can pass more than 94% of the time all year
  - ▶ **110 ft:** Can pass more than 99% of the time all year
- Measures that could further reduce impacts:
  - ▶ See possible mitigation measures.



Percentage of days per month that the *DB Lucy* could pass under each bridge height



## **Process:**

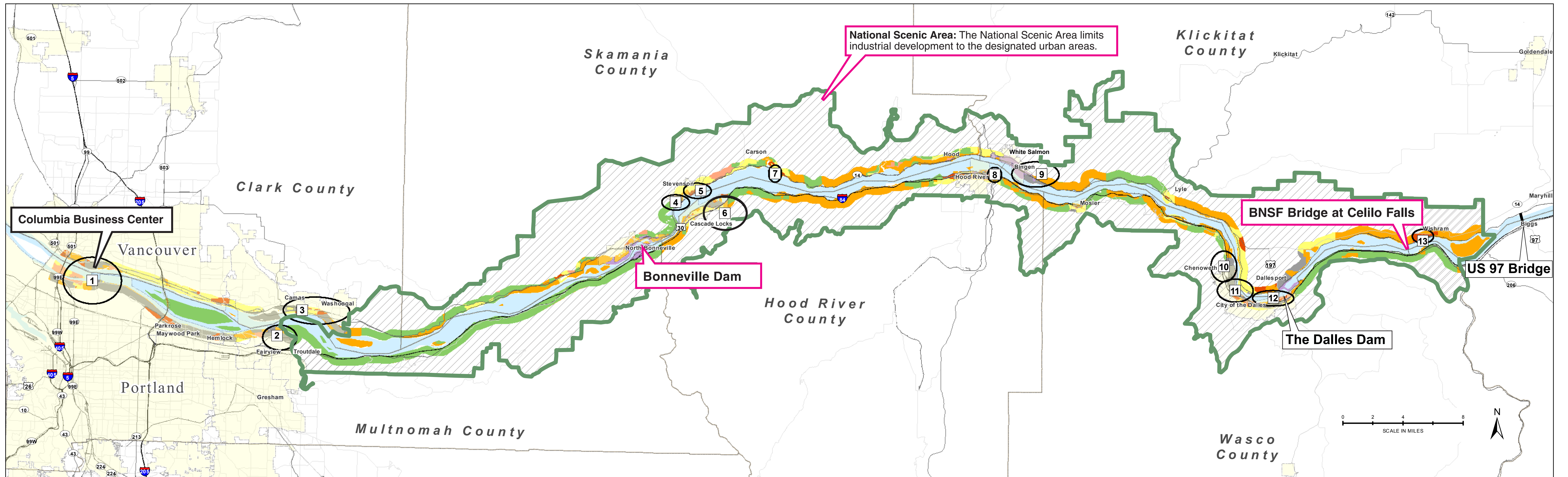
- 1. Avoid impacts**
- 2. Minimize impacts**
- 3. Mitigate impacts that cannot be avoided**

## **POSSIBLE MITIGATION OPTIONS**

- Permanently reconfigure highest vessel elements such as mast, masthead, antenna or crane gantry
- Temporarily dismantle/remove highest elements such as spuds, boom or gantry for passage
- For owners with multiple vessels, use vessels that can pass under the bridge (crane barges)
- Permanently locate vessel to one side of bridge
- Replace or acquire vessel
- Transport vessel by land around bridge (sailboats) as needed
- Relocate owner's operation downstream
- Compensate owners for business loss



# Columbia River **CROSSING** Future use on the river



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Industrial Focus Study Areas

Controlling factors for navigation

National Scenic Area

County Boundary

City Limits

Railroad

### Generalized Zoning

Commercial

Other Commercial

Forest/Agriculture

Industrial

Public/Recreation

Residential

Urban