Upstream and Downstream Passage of American Eels at the Medway Project, Penobscot River, Maine

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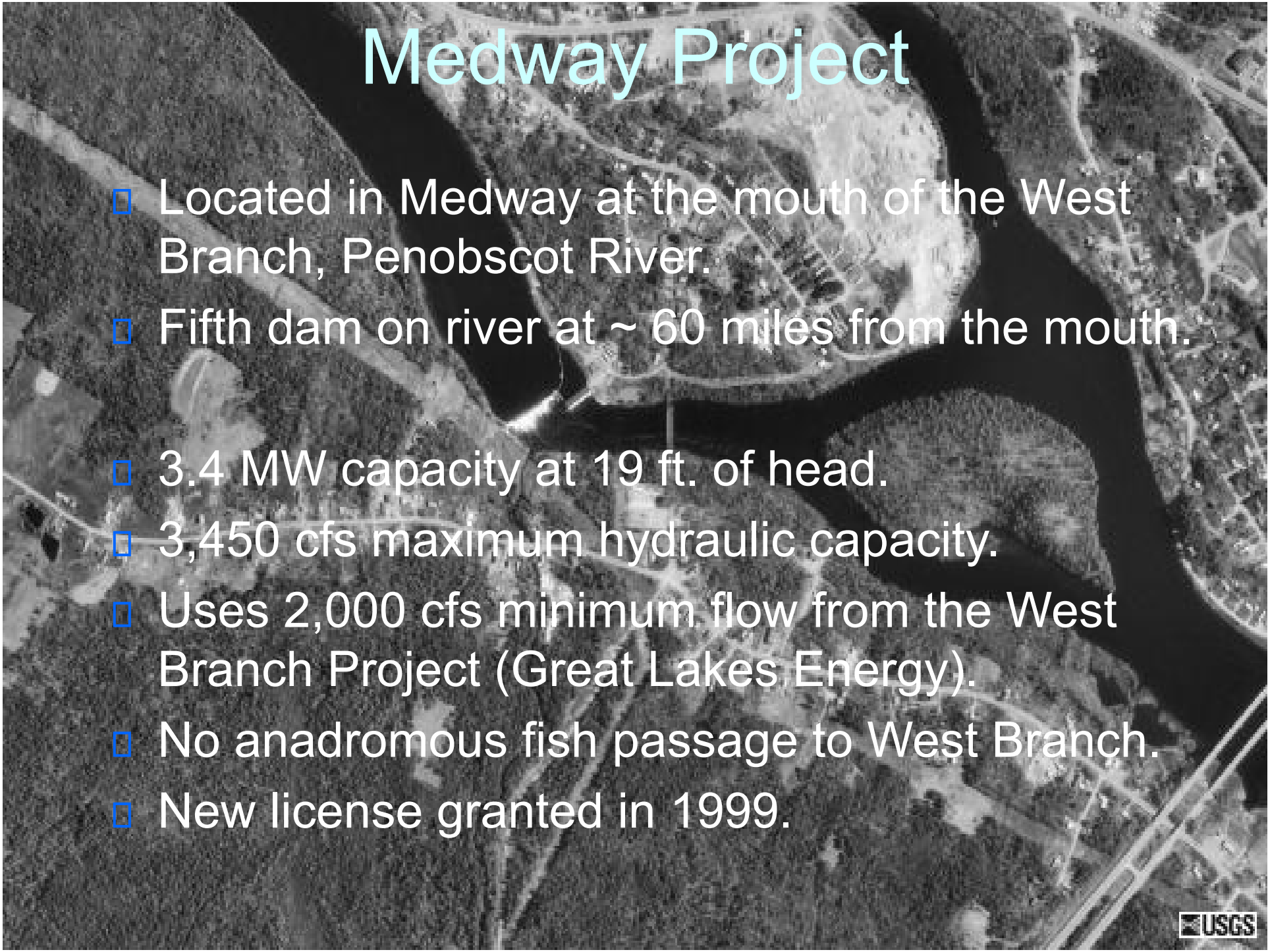
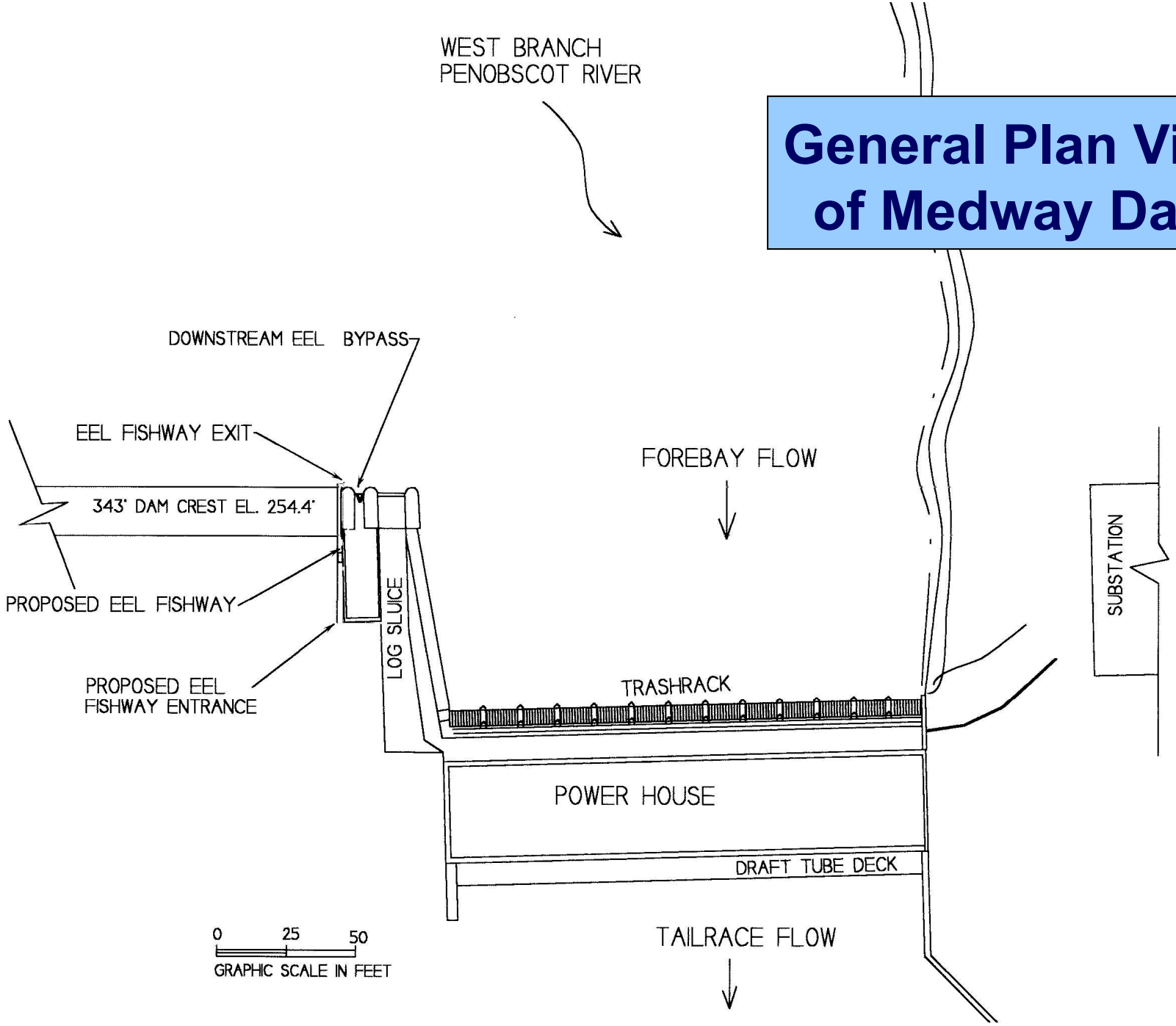
Medway Project

- Located in Medway at the mouth of the West Branch, Penobscot River.
- Fifth dam on river at ~ 60 miles from the mouth.

- 3.4 MW capacity at 19 ft. of head.
- 3,450 cfs maximum hydraulic capacity.
- Uses 2,000 cfs minimum flow from the West Branch Project (Great Lakes Energy).
- No anadromous fish passage to West Branch.
- New license granted in 1999.



General Plan View of Medway Dam



Downstream Bypass

- Bypass is located at the end of the spillway, adjacent to the forebay
- Uses existing gate and stop logs in the top half of the water column
- 15 cfs bypass flow
- Six foot deep weir opening
- Bell mouth weir shape to provide a velocity transition

Downstream Passage Evaluations

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- Video and trapping in 2003

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  - Infrared lighting and supplemental red light
  - Tested with drogues
  - Real-time recording in six hour blocks
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- Video and trapping in 2003
  - Paired video & trapping to assess video effectiveness.
  - An historic weir fishery indicated run timing in August and September.


Trapping Set-Up
in 2003

Downstream Results Summary
(preliminary)

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  - Optimal lighting is very difficult.
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  - **Only a few days were trapped in 2003.**

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- Trapping was an effective monitoring method.
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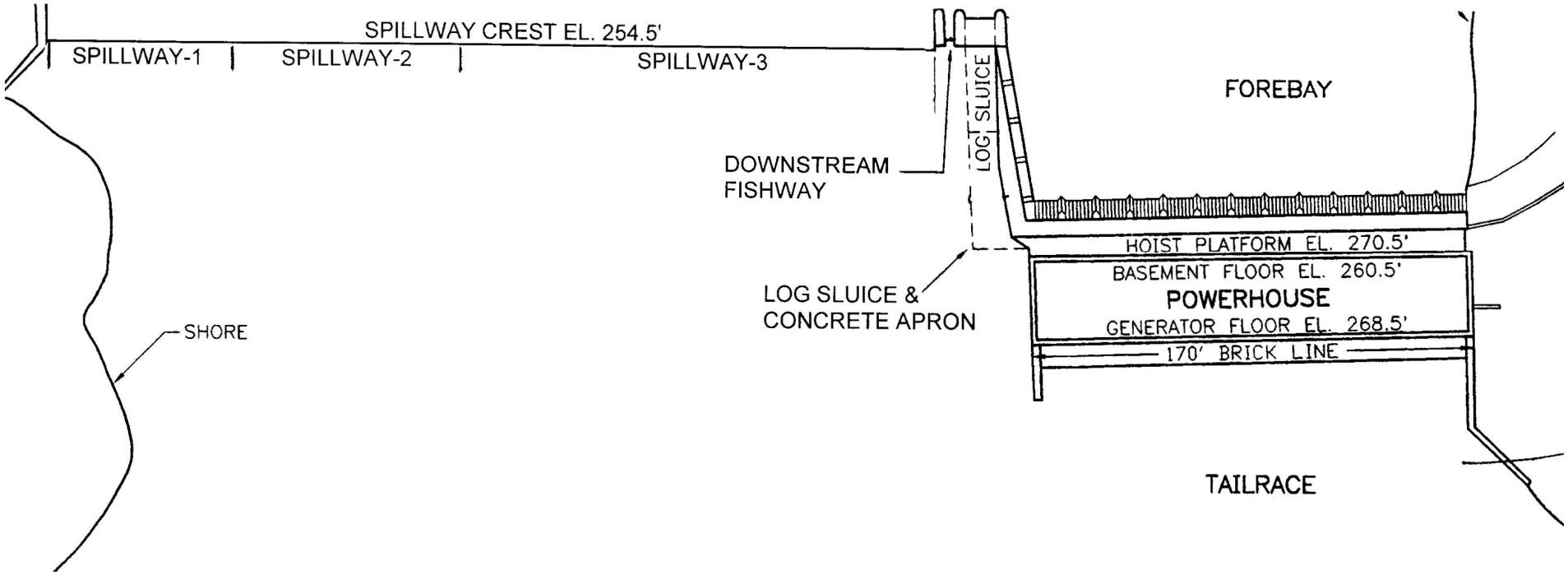
  - Very few days were trapped in 2003.
- **Downstream migrants are using the bypass.**


Typical eels trapped in 2003

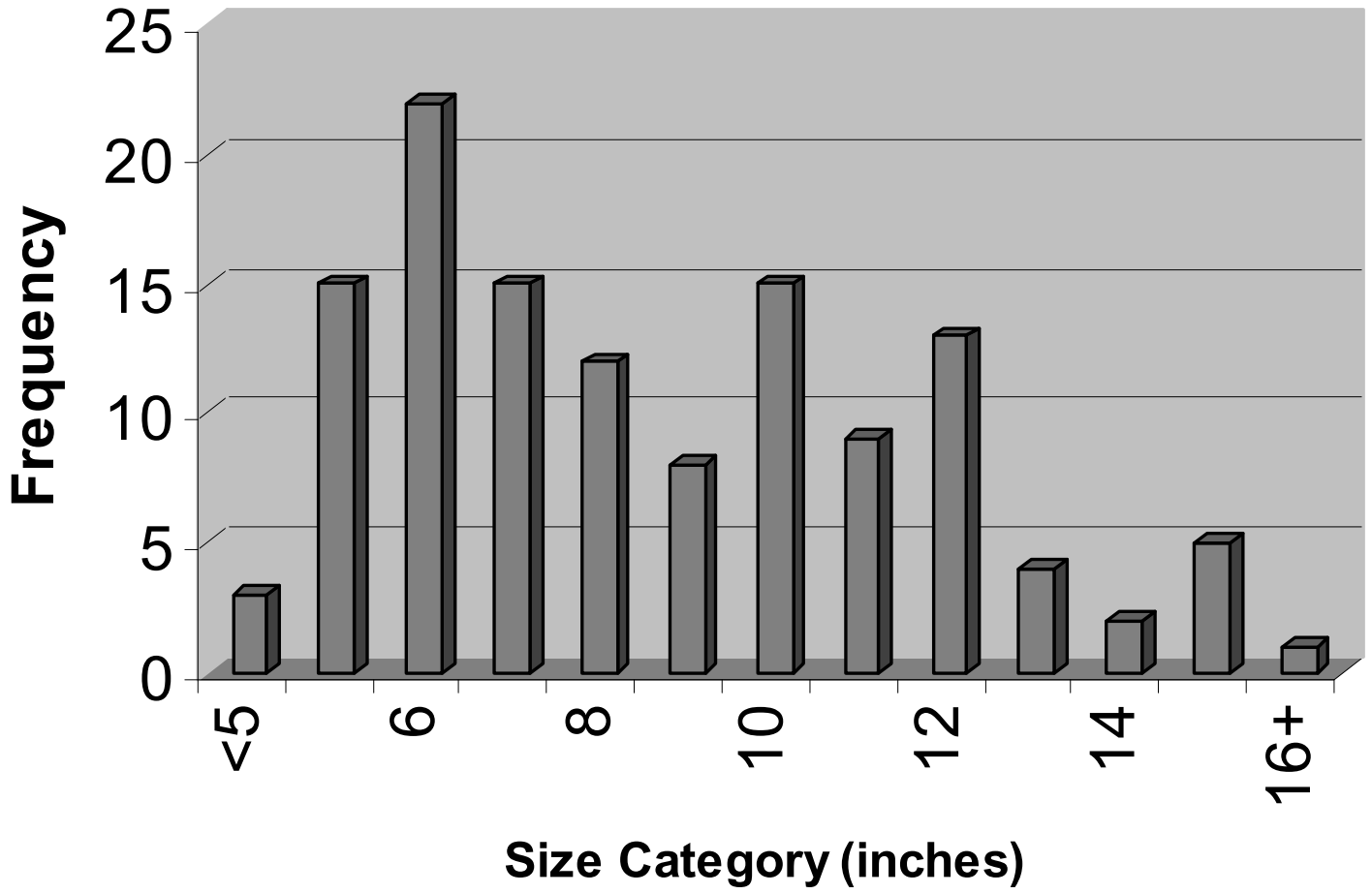
Upstream Passage Evaluation

- **Goals**
  - Determine run timing.
  - Document typical size of migrant eels.
  - Assess migratory behavior with respect to physical features of the dam.
  - Design an upstream fishway and operating plan for the site.
- **Methods**
  - Night observations.
  - Trapping.

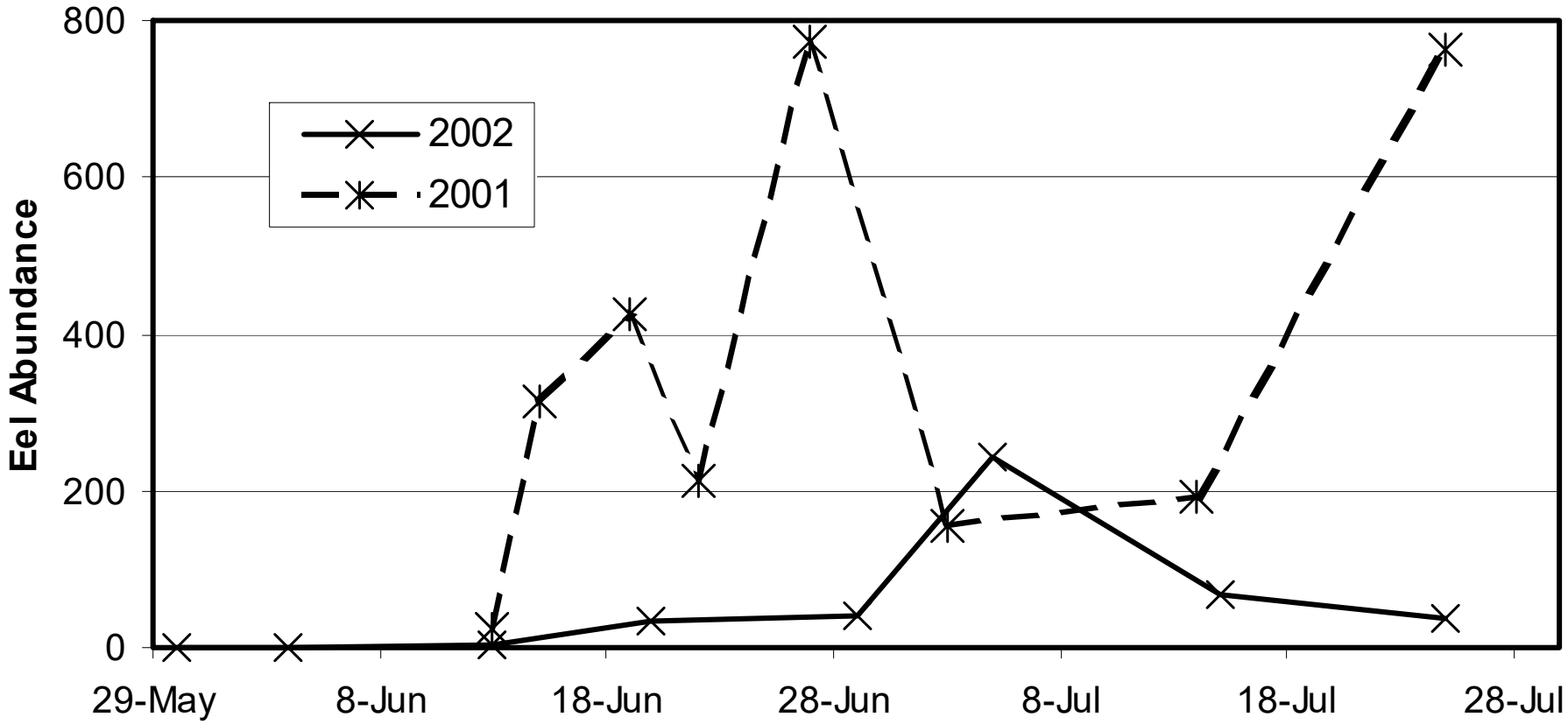
Upstream Passage Study Area



2002 Size Distribution of Migrant Eels



Seasonal Timing of Medway Eel Migration



Upstream Passage Summary

- **Nearly all migrant eels were associated with “staging” locations.**
- Several sizes/ages of eels are active at Medway.
- Only the smallest eels are currently able to climb wetted surfaces and pass the dam.
- Very small amounts of spill inhibit passage over wetted surfaces.
- There were no obvious effects from ambient light.
- Migratory activity was not observed until early to mid-June at temperatures above 18 Celsius.

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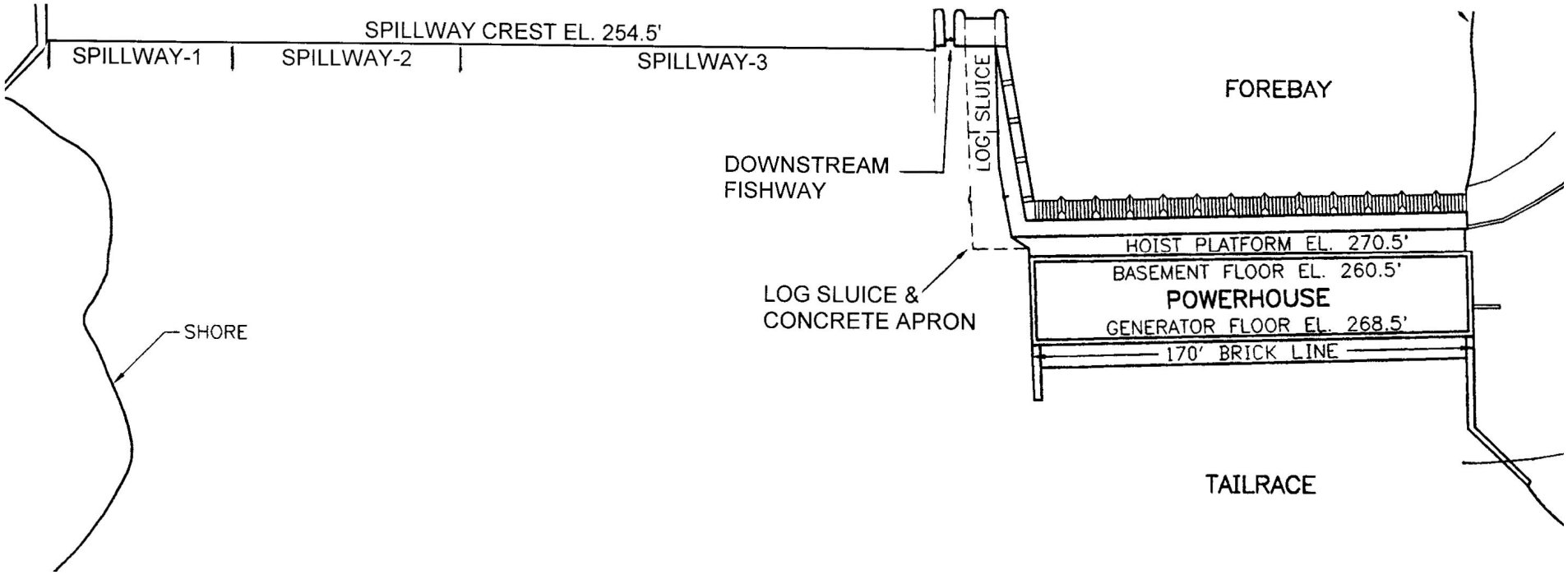

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