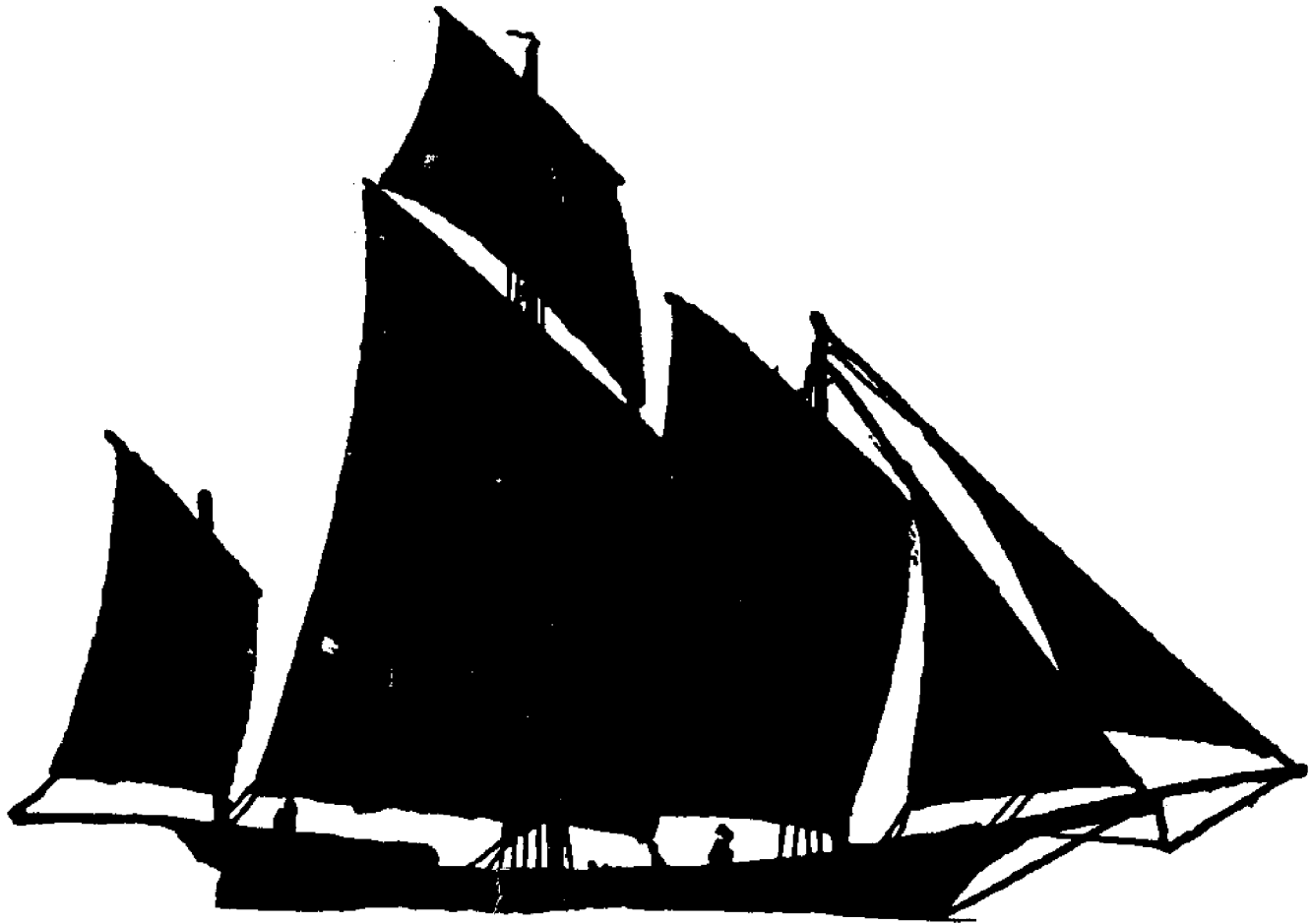




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# *The New* Tides & Tidal Currents of Narragansett Bay



Rhode Island Sea Grant/Ocean Engineering

Malcolm Spaulding ● Craig Swanson ● Chris Turner

University of Rhode Island Marine Technical Report



# The New Tides and Tidal Currents of Narragansett Bay

1990 — 1999

## How to Use This Book

The 13 charts in this book show the tidal currents (direction and speed) and the tidal heights in Narragansett Bay for each hour in a tidal cycle (about 12.4 hours). The values are based on computer calculations for approximately 600 points in the Bay. The first chart shows conditions in the Bay when it is high tide (high water) at Newport. The subsequent charts show predicted tidal heights and currents for each succeeding hour.

○ **Current Charts.** The current charts show the predicted speed to the nearest tenth of a knot. Arrows indicate the direction of flow.

○ **Height Charts.** The tidal height charts show the predicted height above (or below) mean sea level, to the nearest tenth of a foot.

○ **Time and Range Table.** Time and range (rng) of the high tides at Newport is shown in the table on pages 28-39. The range is the difference in water level between high tide (high water) at the time shown and the next low tide. The table is subdivided into one month per page, and shows the time and range of the high tide for each day of each year from 1990 to 1999.

Times for high tide at Newport are given according to a 24-hour clock, at Eastern Standard Time (EST). From late April until late October, when Eastern Daylight Time (EDT) is in effect, add one hour to the chart time to convert to local time.

○ **Which Chart to Use.** The charts show conditions in the Bay for each hour following high tide in Newport. To choose the correct chart, first decide what day and time you want to know about, for example, 3:30 p.m. (15:30), July 25, 1994. Then, consult the Time and Range Table to find the previous high tide. The table lists high tides for 09:22 and 21:43 (9:43 p.m.). Converted to EDT, these times are 10:22 a.m. and 10:43 p.m. The most recent prior high tide occurred at 10:22 a.m., which is a difference of 5 hours and 8 minutes from 3:30 p.m. Rounding off to the nearest hour, use the chart labeled "Five Hours After High Water."

○ **Correction Factors.** The charts are based on the average tidal cycle. Since daily cycles may vary from the average, it is necessary to use correction factors to compensate. See the example below.

○ **Example:** Find the tide height and current for just east of Taylor Point on Conanicut Island at 12:30 p.m. on August 20, 1994.

*Step One:* Consult the Time and Range Table for August 20, 1994 to find when high tide last occurred: 6:41 a.m. EST, which is equivalent to 7:41 a.m. EDT. Since that is a difference of 4 hours and 49 minutes from 12:30 p.m., round off to the nearest hour and go to the chart labeled "Five Hours After High Water at Newport."

*Step Two:* The chart shows an ebbing southerly current of 0.3 knots and a tide height of -1.5 feet off Taylor Point on Conanicut Island.

*Step Three:* Return to the Time and Range Table. Last high water had a range (rng) of 4.3 feet. According to the Table of Correction Factors (above), the speed should be multiplied by 1.2 and the height multiplied by 1.2.

*Step Four:* Corrected speed:  $0.3 \times 1.2 = .36$  knots. Corrected height:  $-1.5 \times 1.2 = -1.8$  feet below mean sea level. No correction is required for direction.

○ **Limitations.** These tidal current and height charts for Narragansett Bay are meant primarily for the recreational user. The values given reflect assumptions of zero wind and constant river

Table of Correction Factors

Range (feet)	Velocity Correction Factor	Height Correction Factor
1.6 to 2.0	0.7	0.5
2.0 to 2.4	0.7	0.6
2.4 to 2.6	0.7	0.7
2.6 to 2.8	0.8	0.7
2.8 to 3.0	0.8	0.8
3.0 to 3.4	0.9	0.9
3.4 to 3.8	1.0	1.0
3.8 to 4.2	1.1	1.1
4.2 to 4.4	1.2	1.2
4.4 to 4.6	1.2	1.3
4.6 to 4.8	1.3	1.3
4.8 to 5.0	1.4	1.4
5.0 to 5.4	1.4	1.5
5.4 to 5.6	1.5	1.5
5.6 to 5.8	1.5	1.6
5.8 to 6.0	1.6	1.6

flow. Variation in these factors could effect the magnitude and direction of tidal currents in the Bay. During stormy weather, the charts cannot provide reliable information.

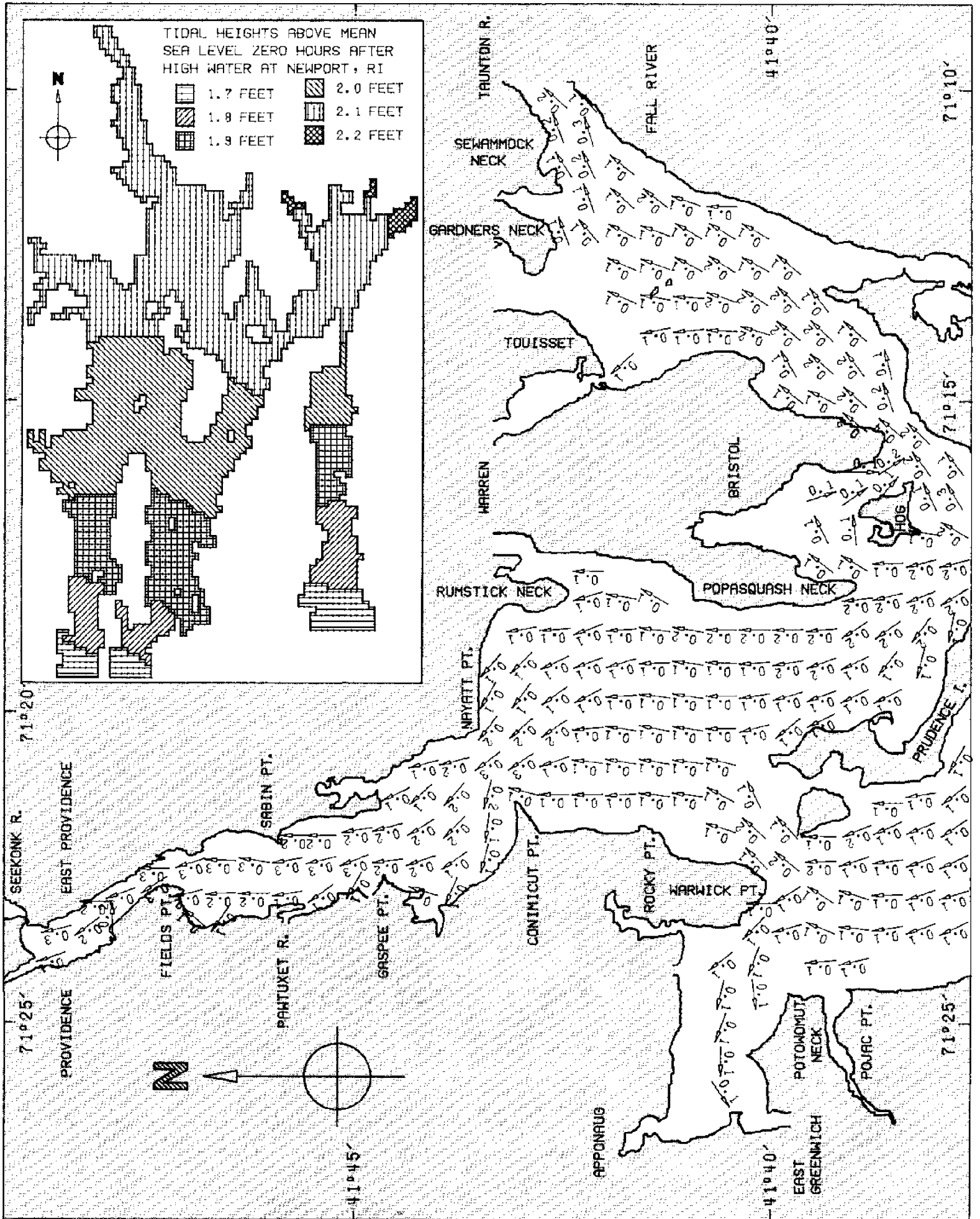
The charts are not accurate close to shore.

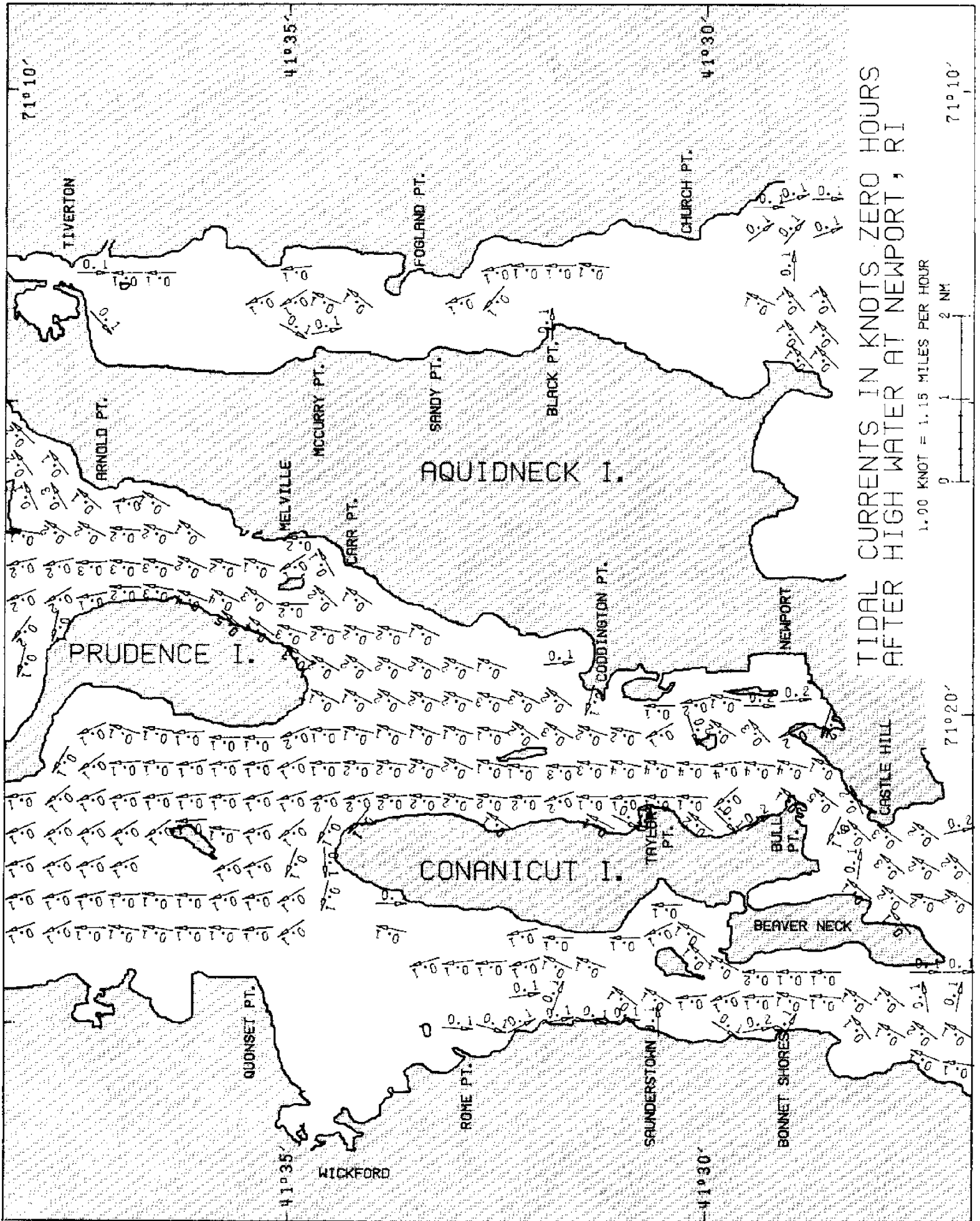
Additional copies of this publication can be purchased from Rhode Island Sea Grant, University of Rhode Island Bay Campus, South Ferry Road, Narragansett, RI 02882-1197. *do not out of print*

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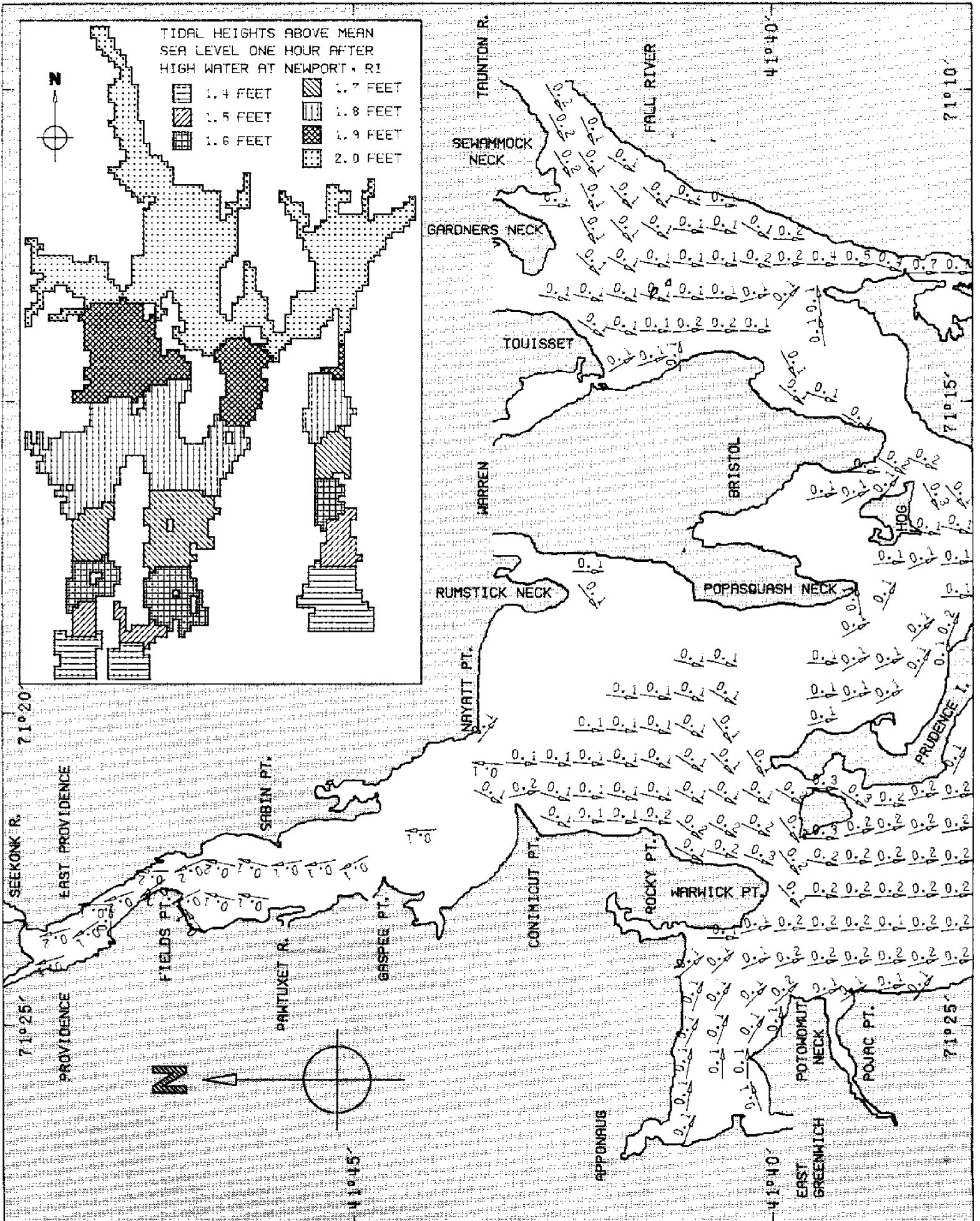


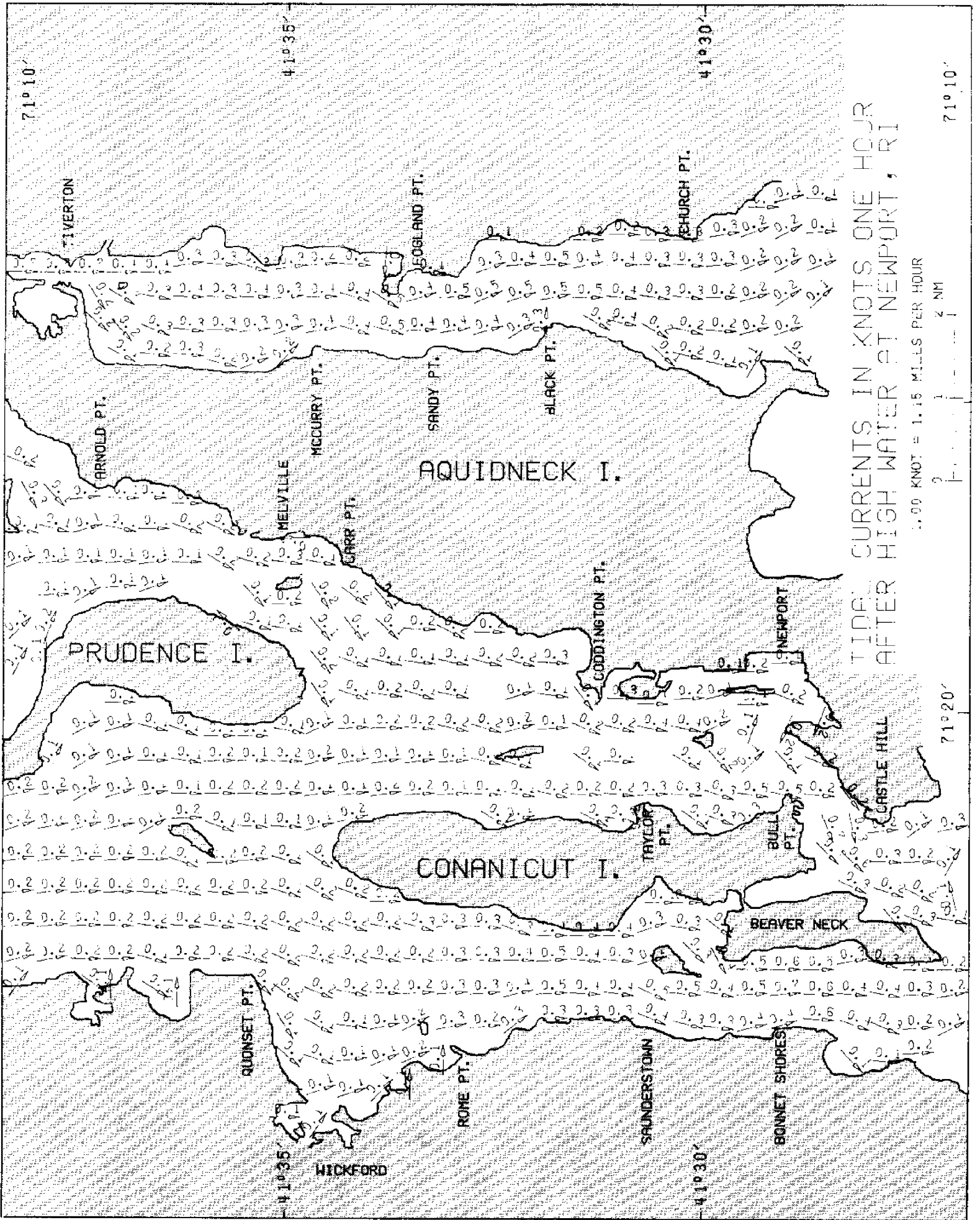


TIDAL CURRENTS IN KNOTS ZERO HOURS AFTER HIGH WATER AT NEWPORT, RI

1.00 KNOT = 1.15 MILES PER HOUR



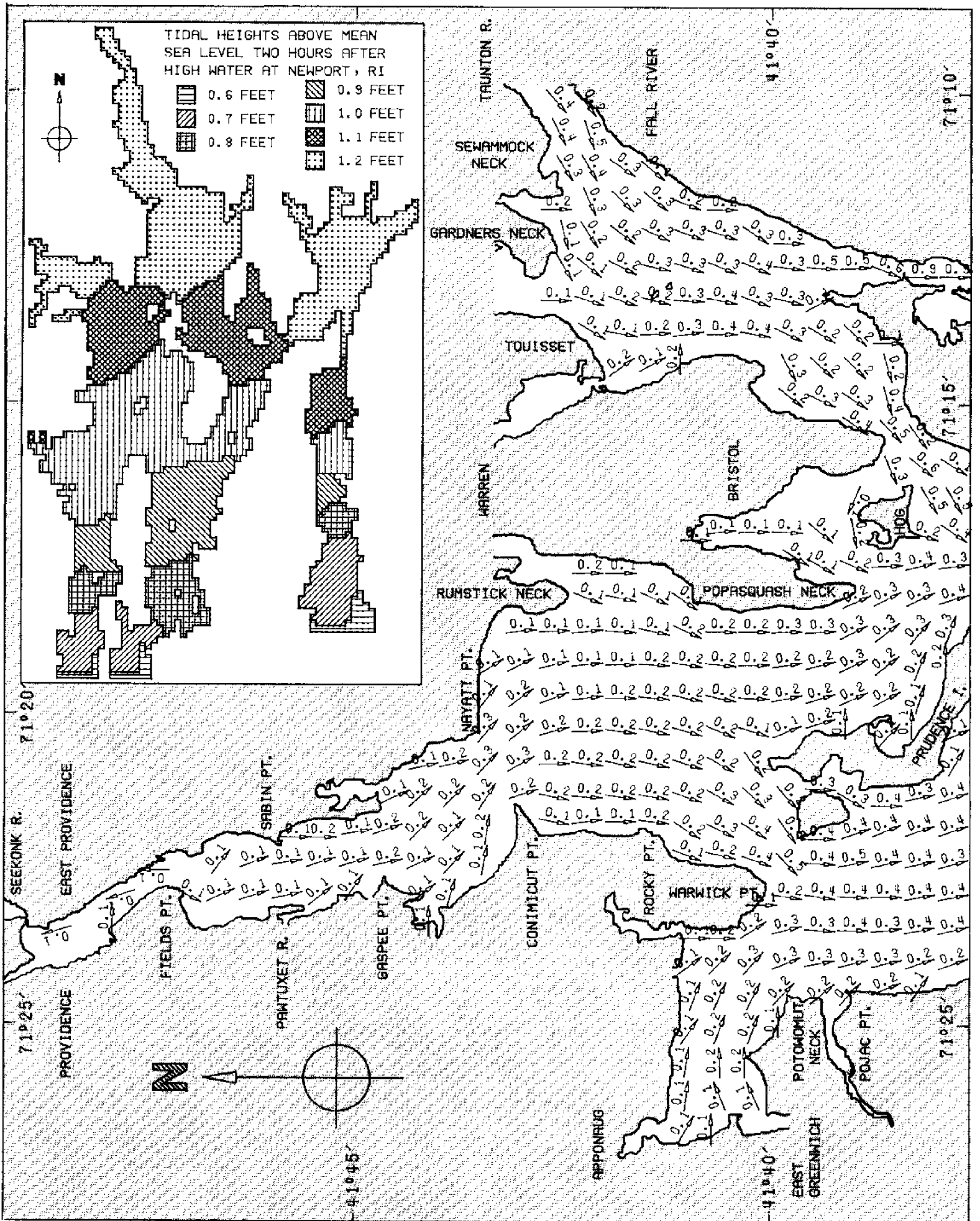


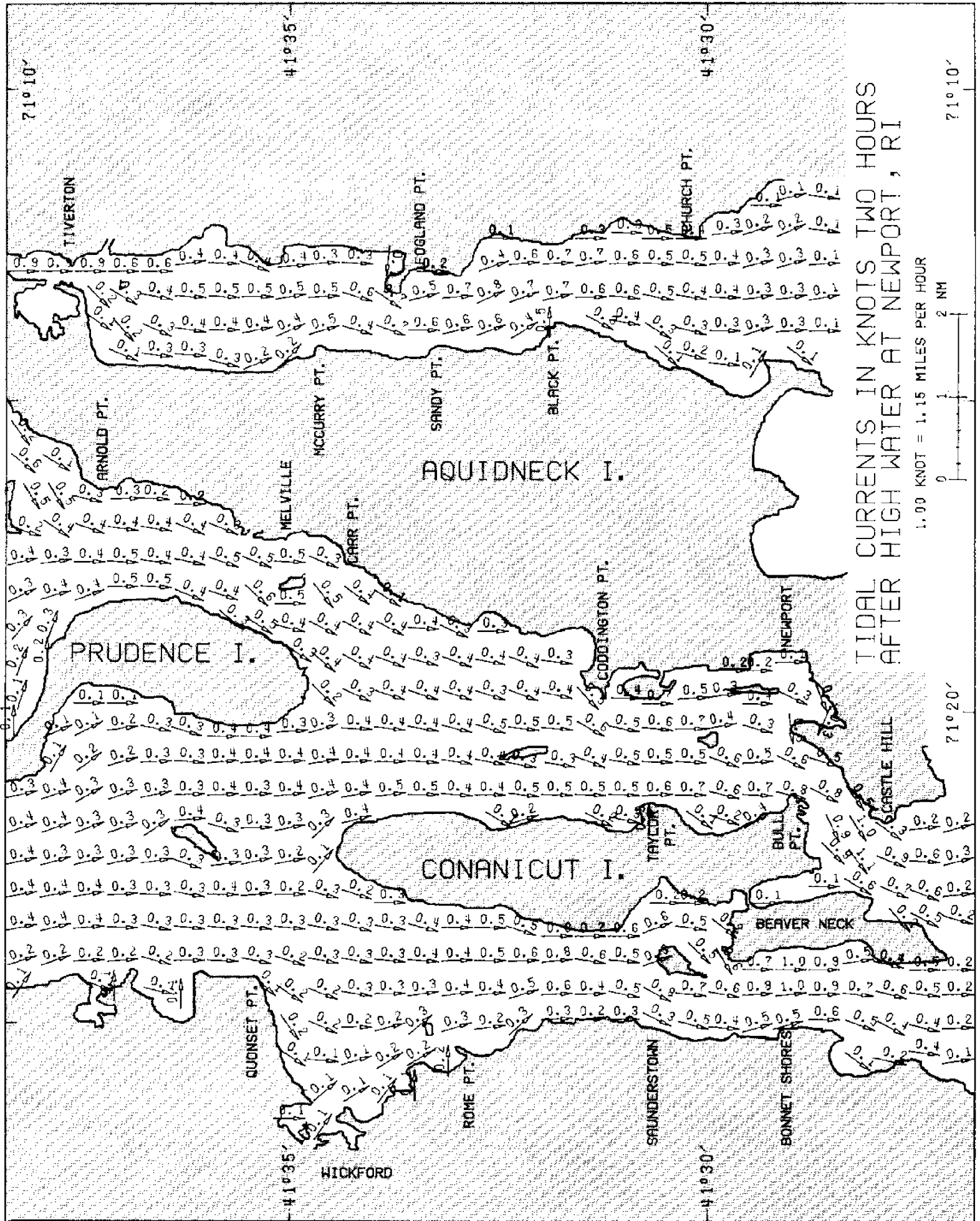


TIDE: CURRENTS IN KNOTS ONE HOUR AFTER HIGH WATER AT NEWPORT, RI

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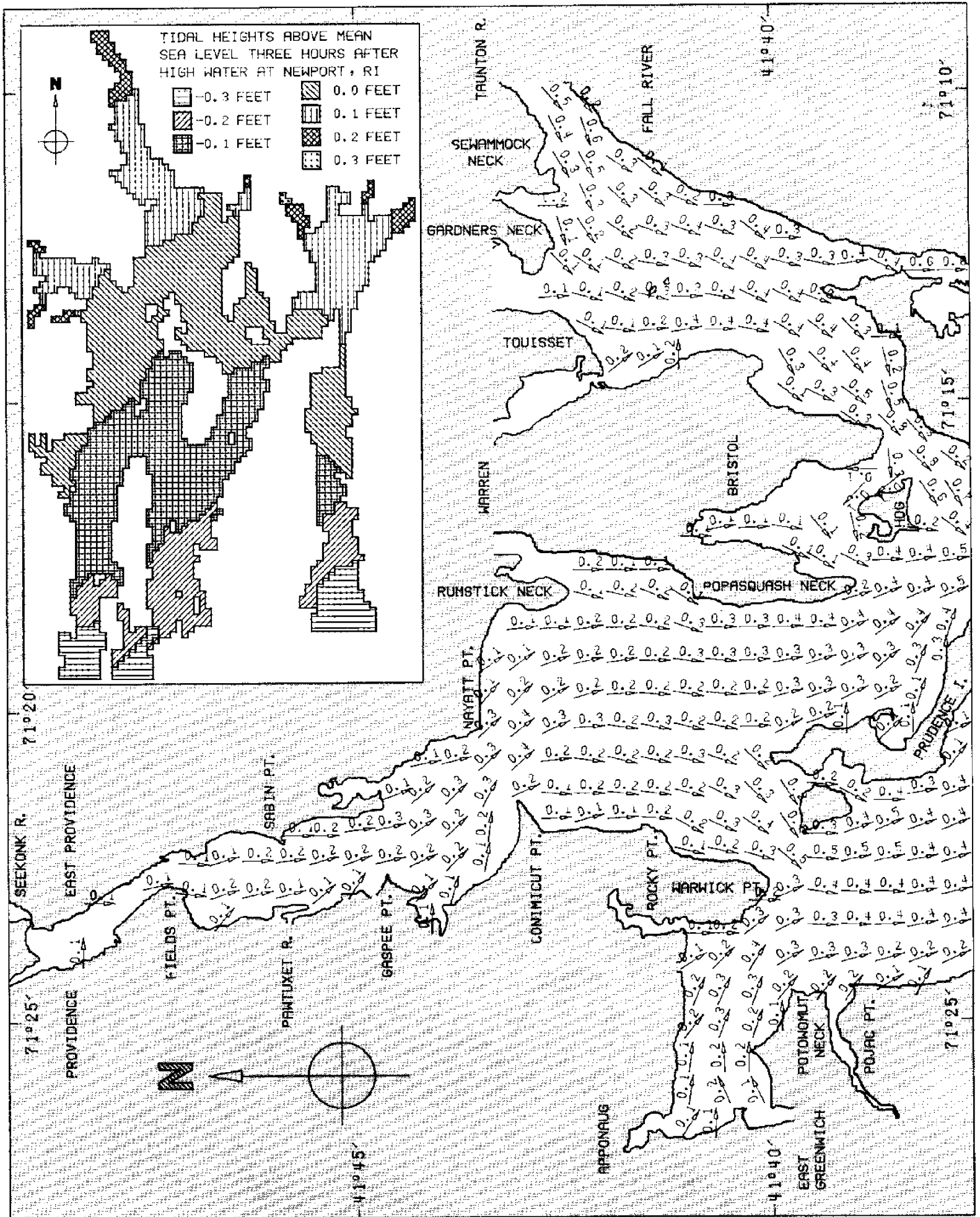
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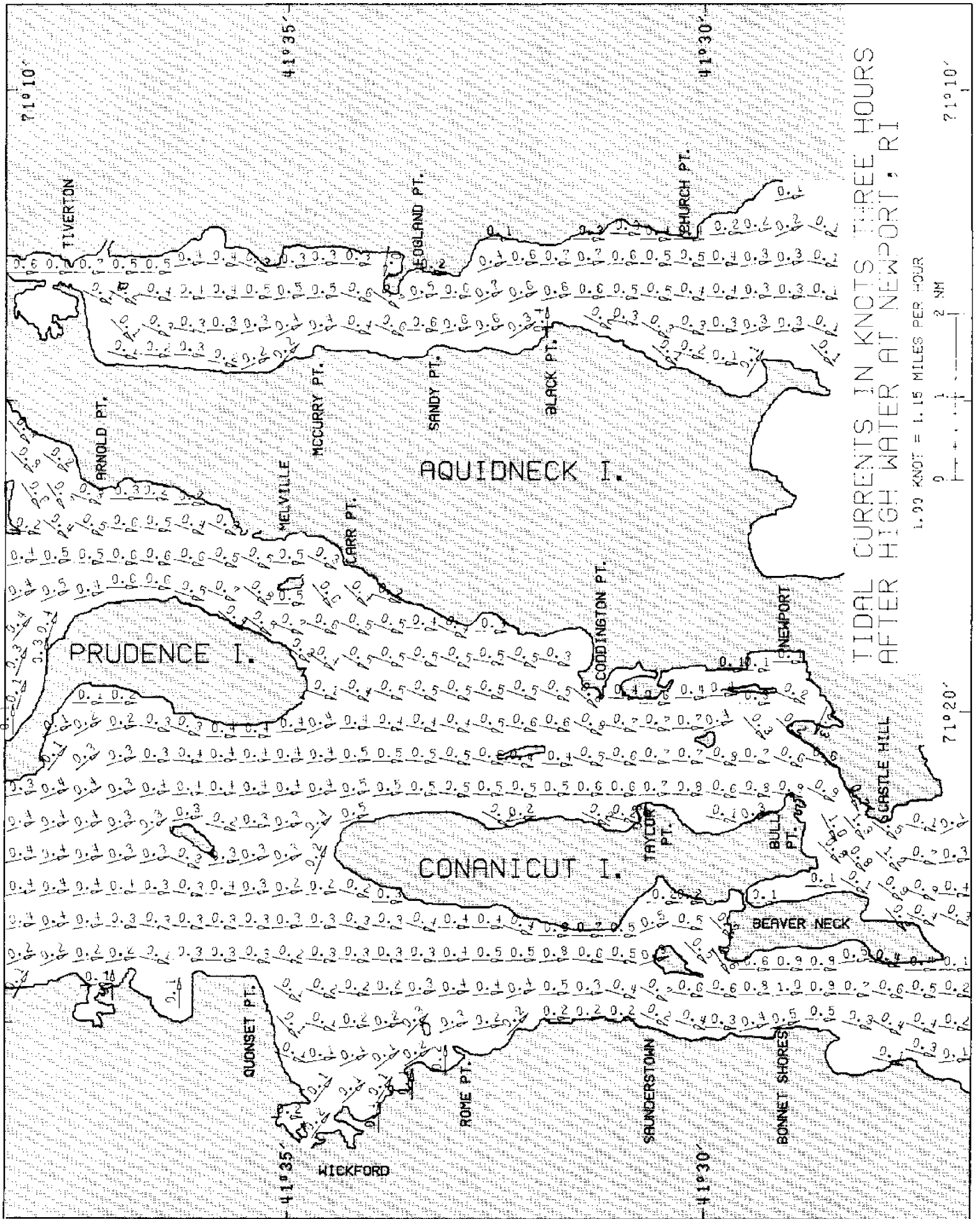




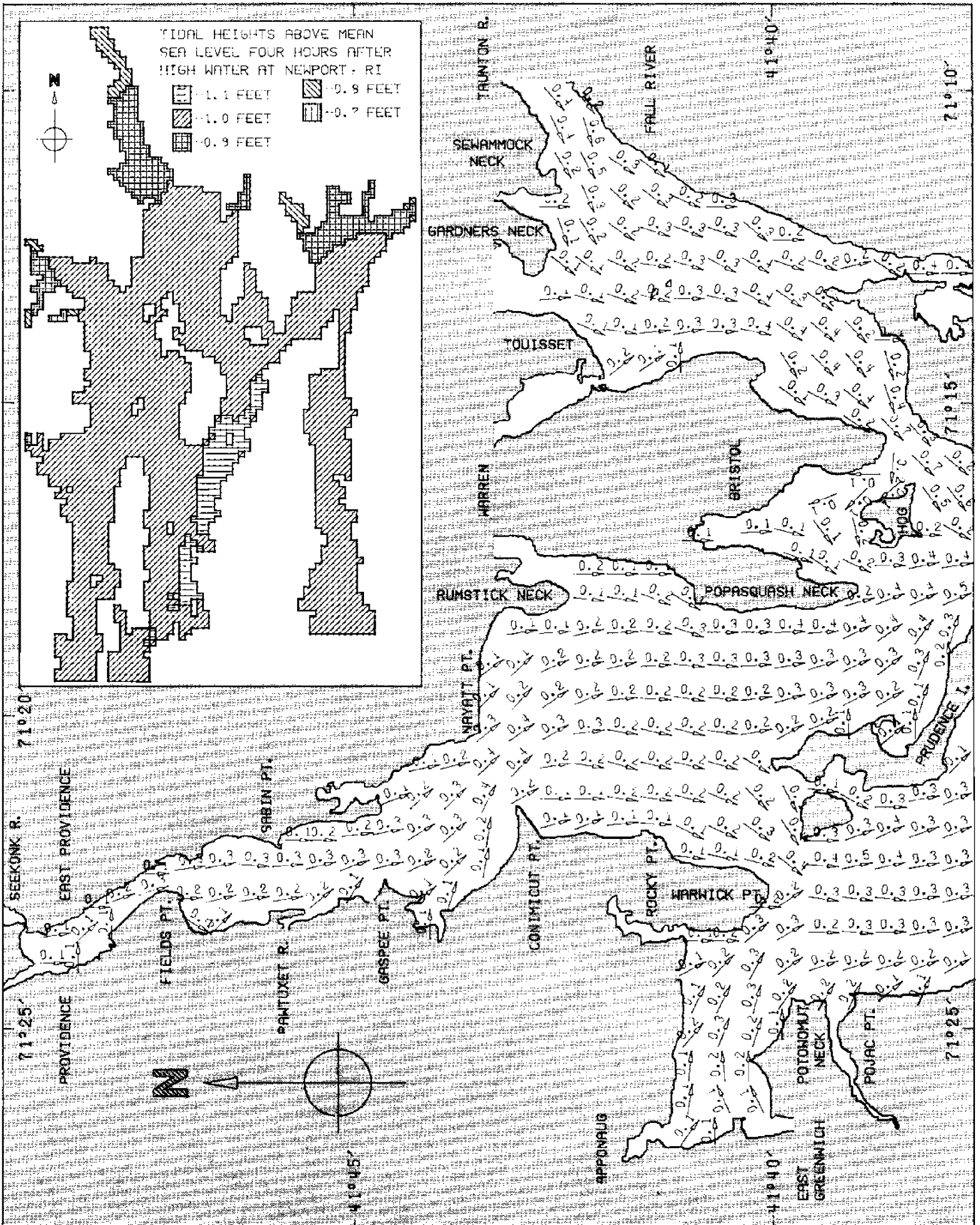
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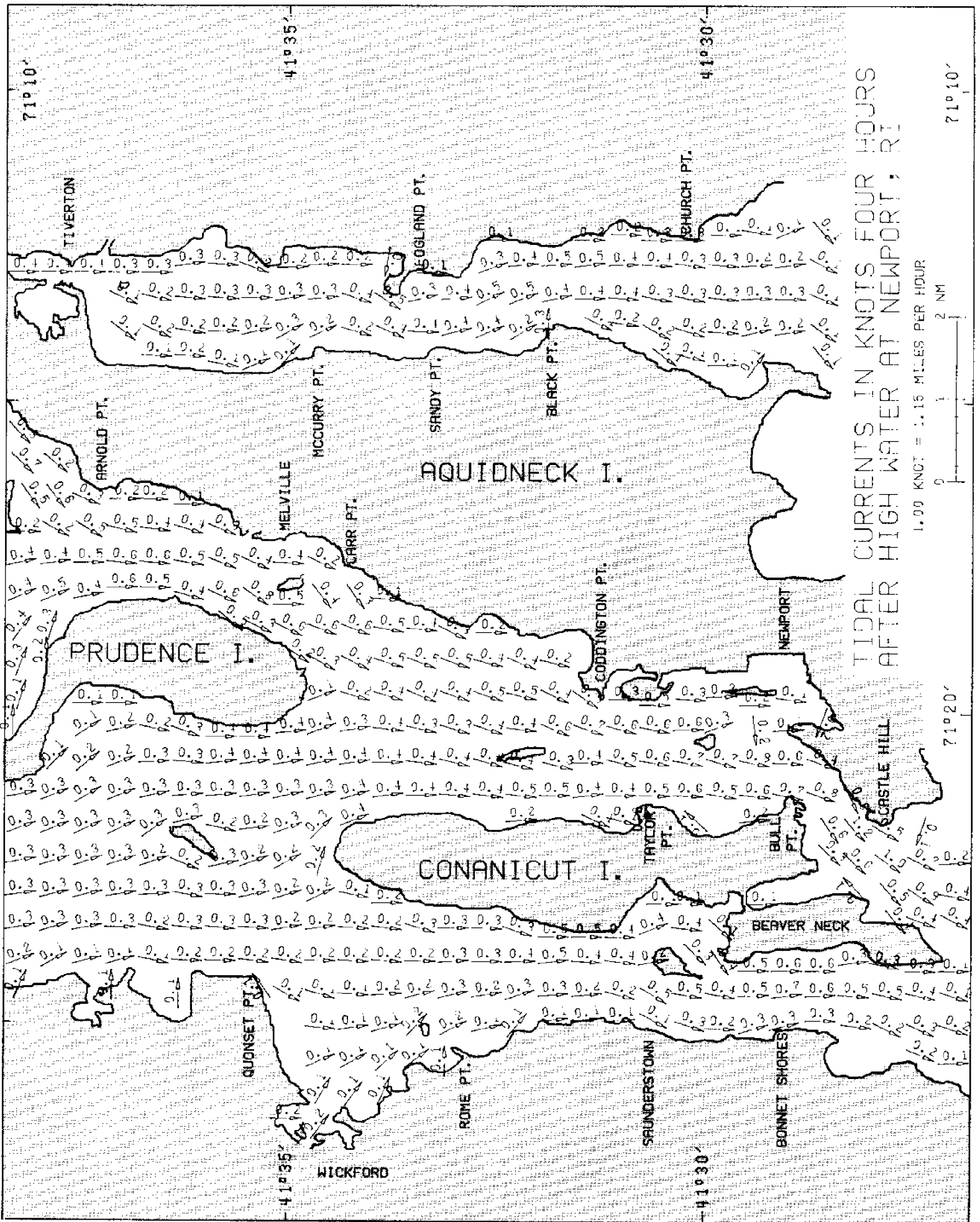






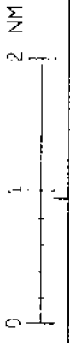
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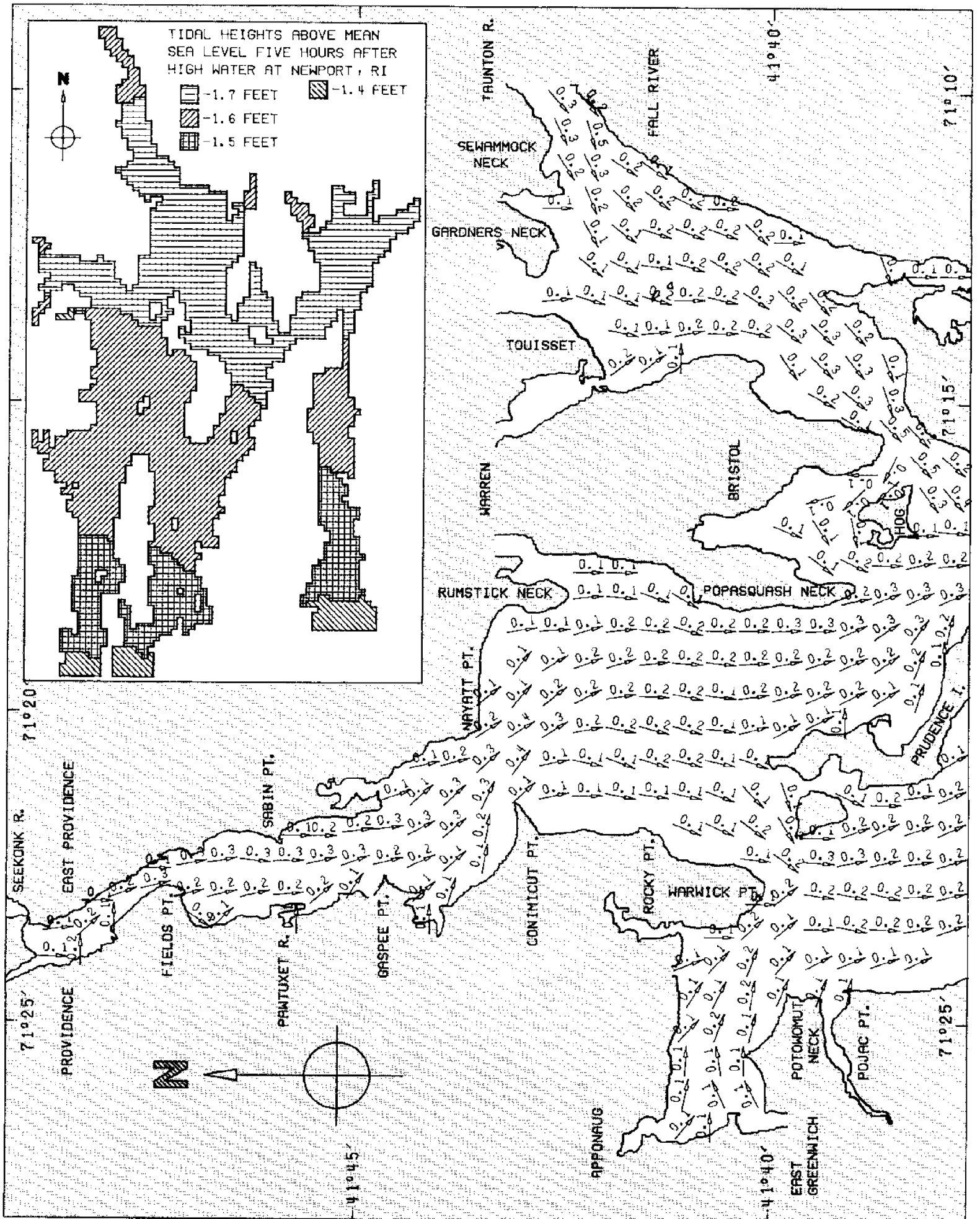


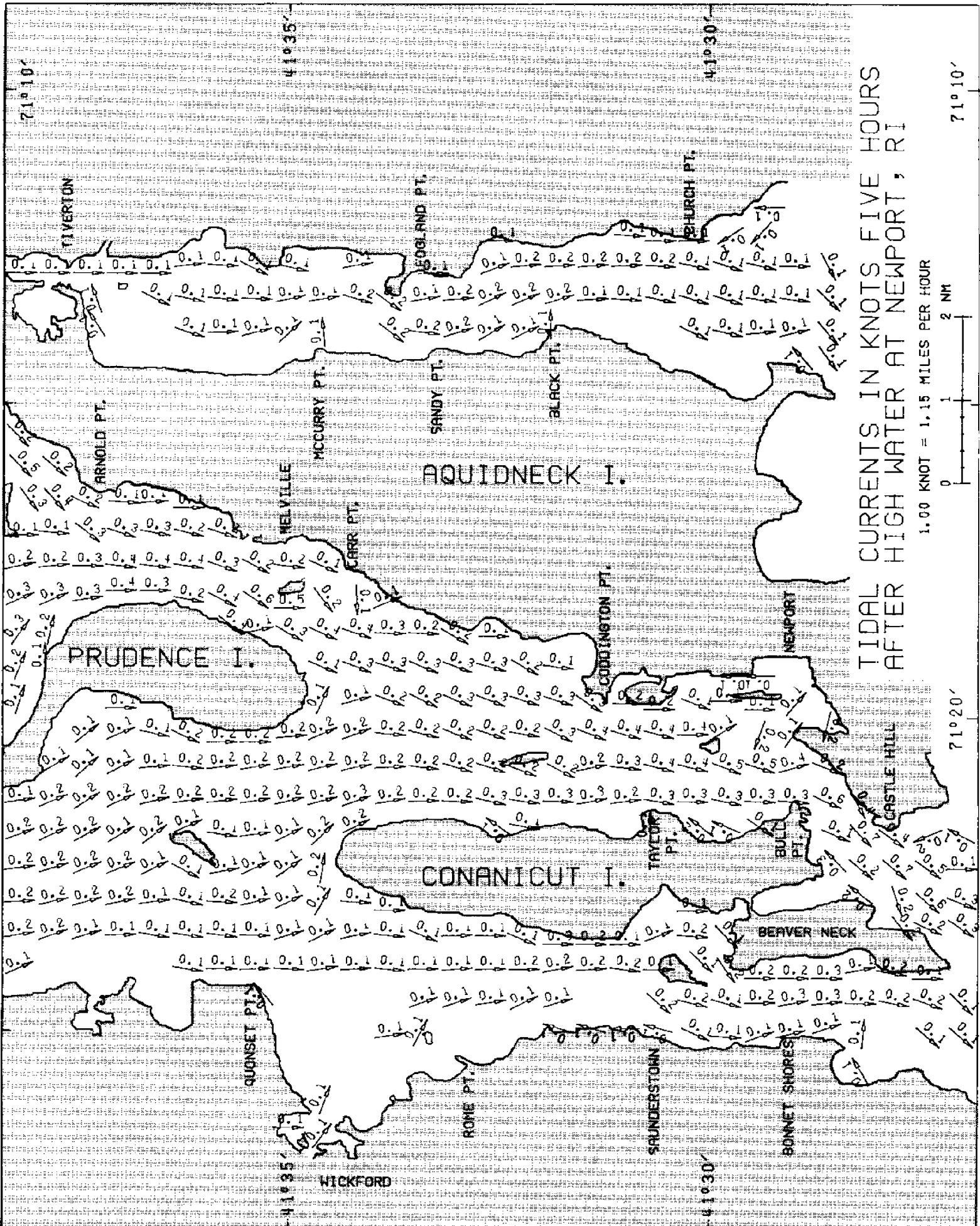


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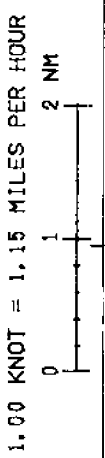
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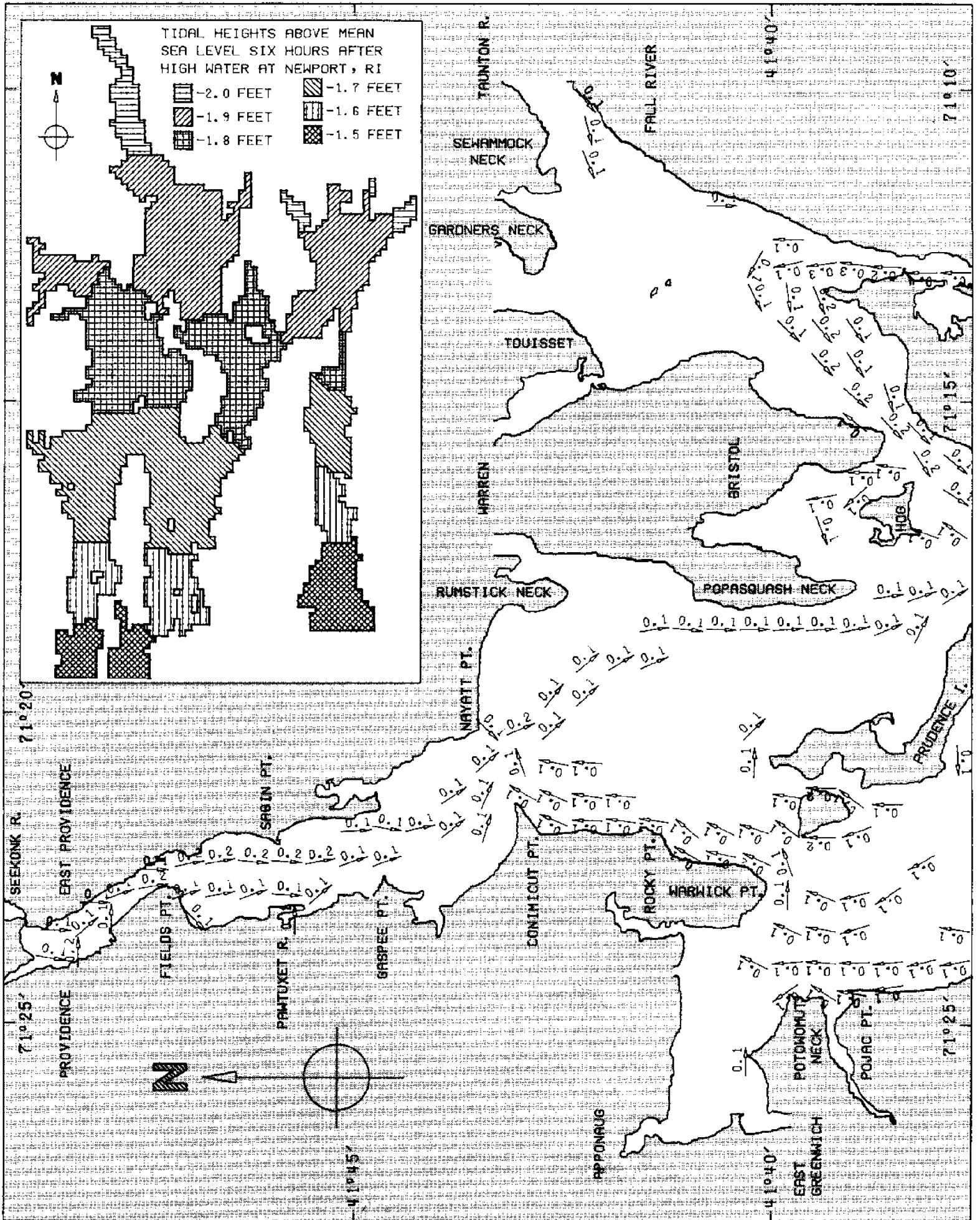


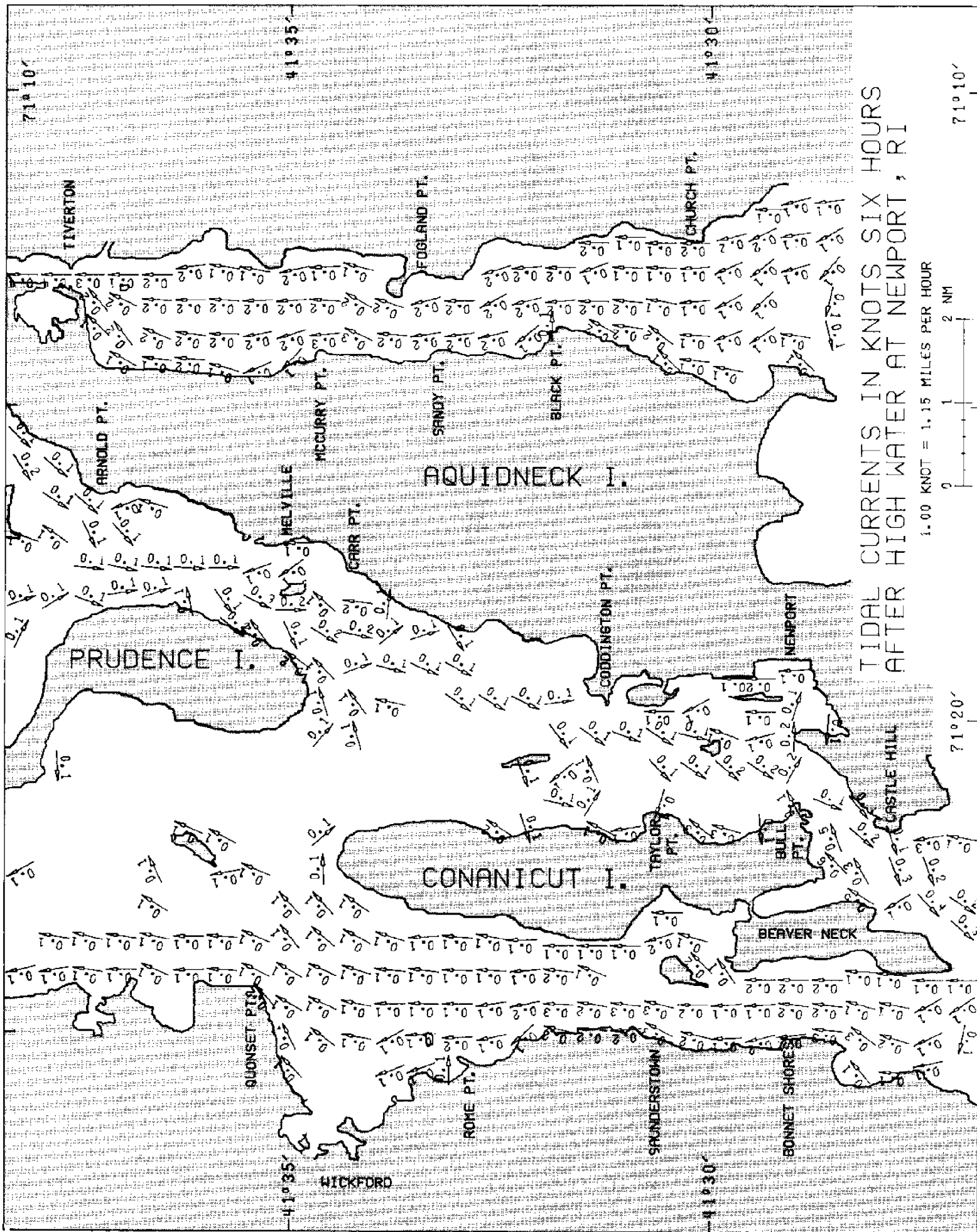




TIDAL CURRENTS IN KNOTS FIVE HOURS AFTER HIGH WATER AT NEWPORT, RI

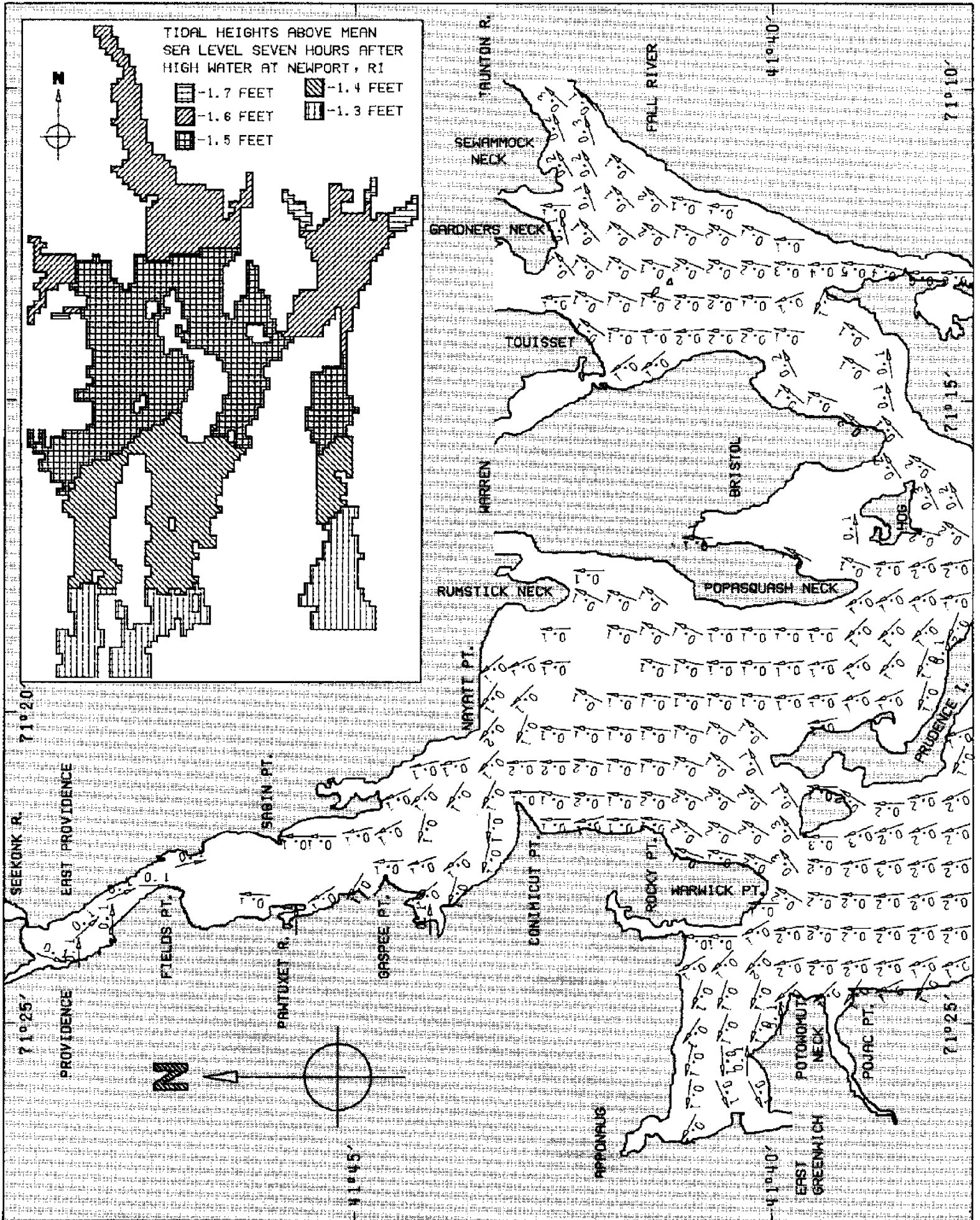


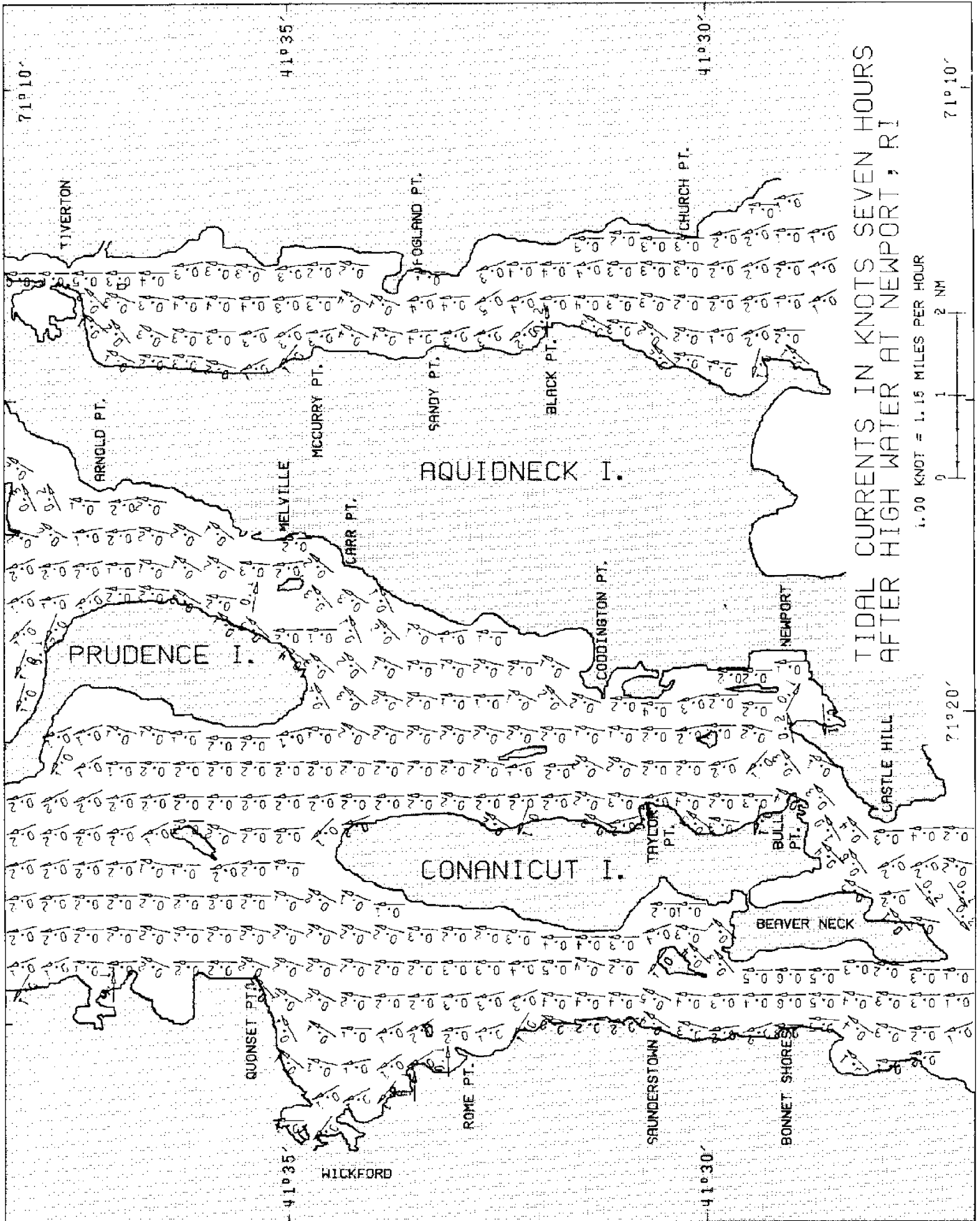




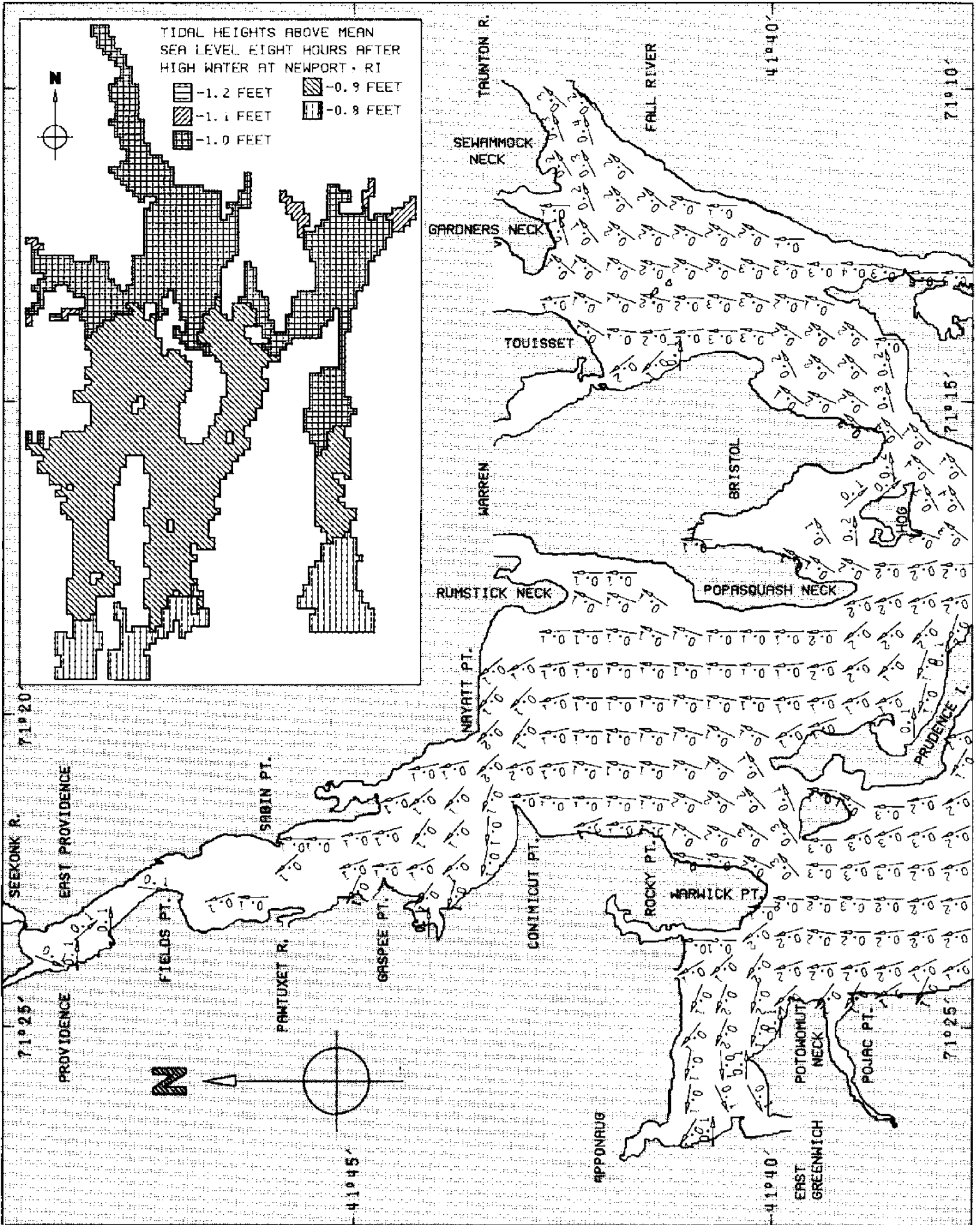
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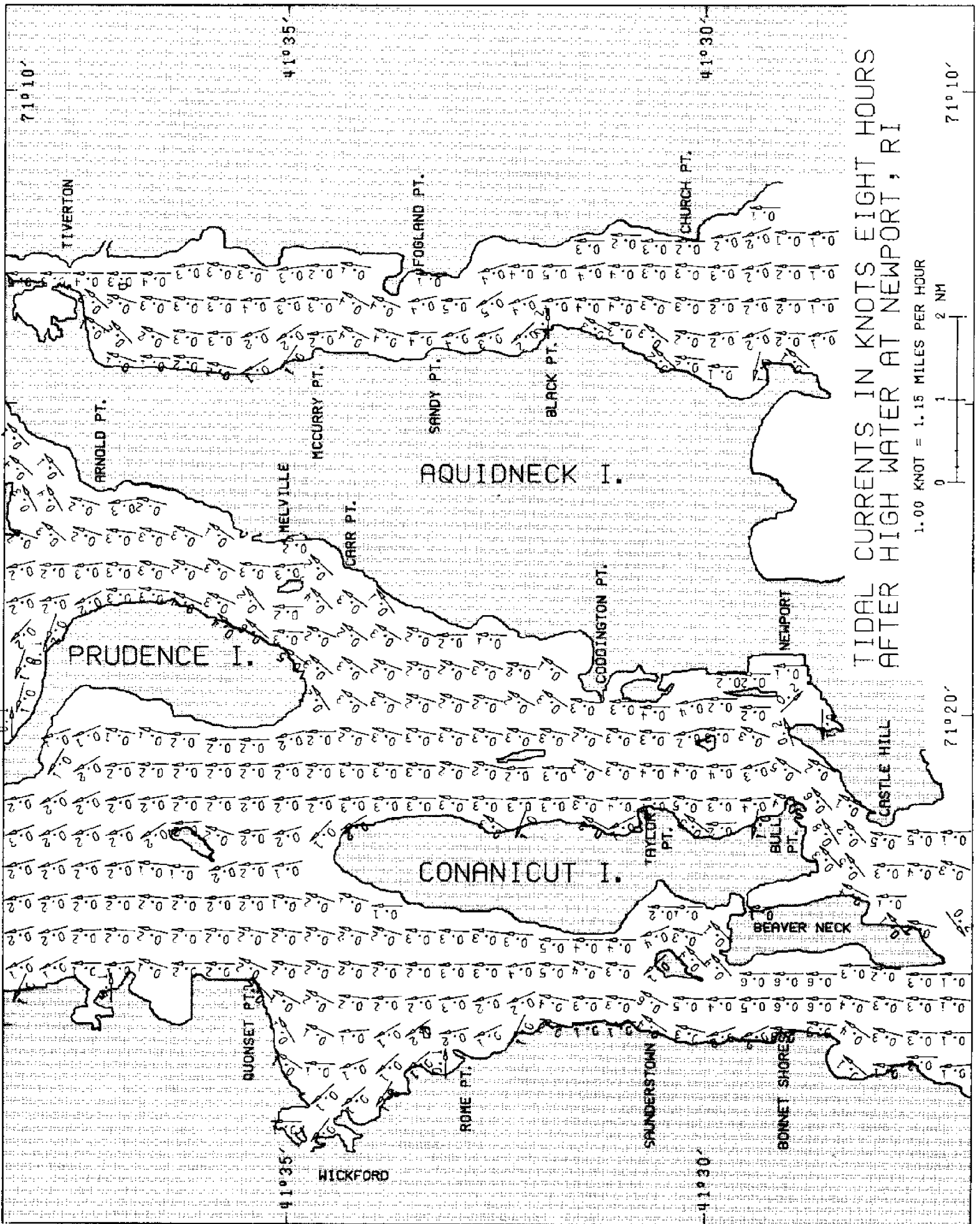






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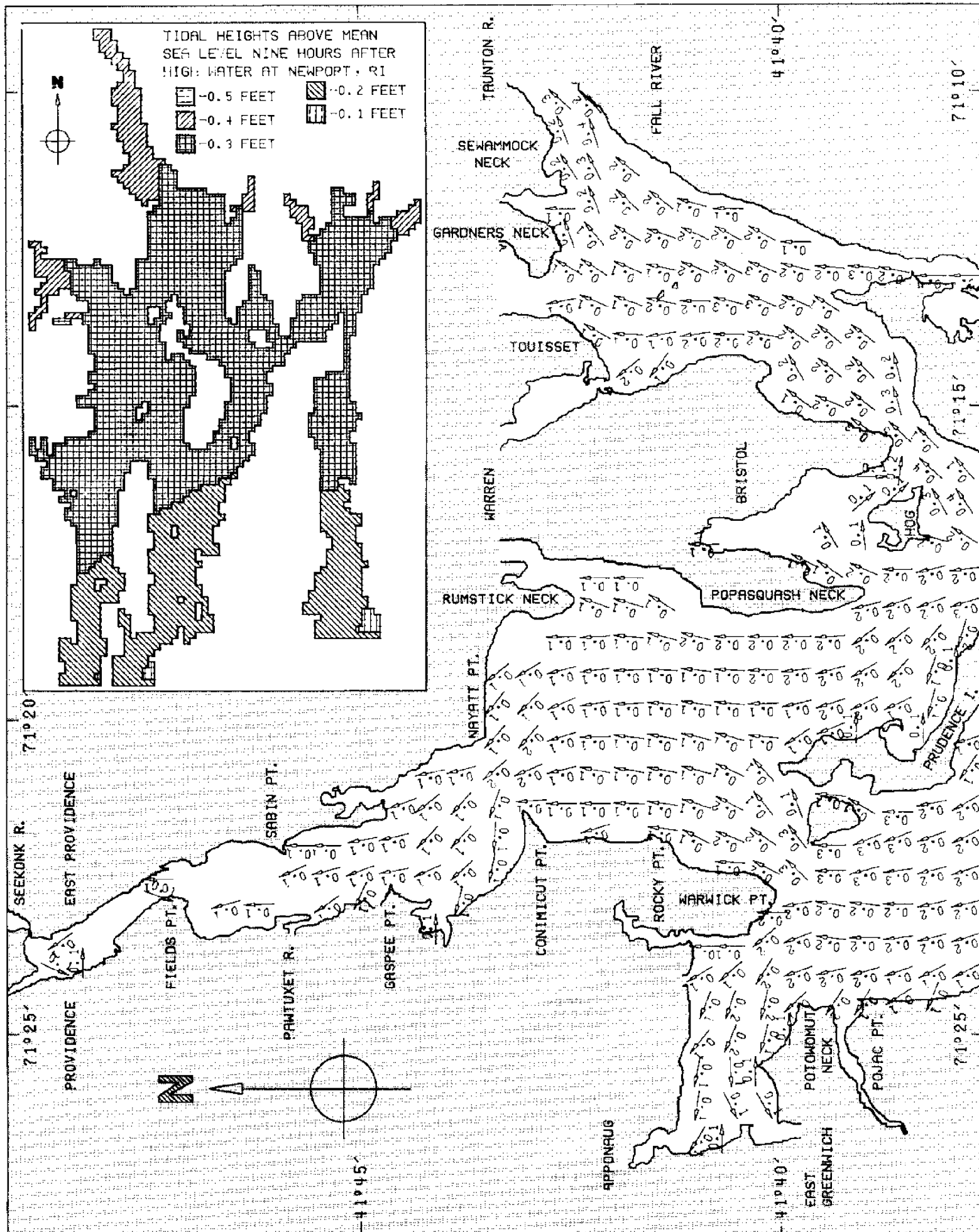


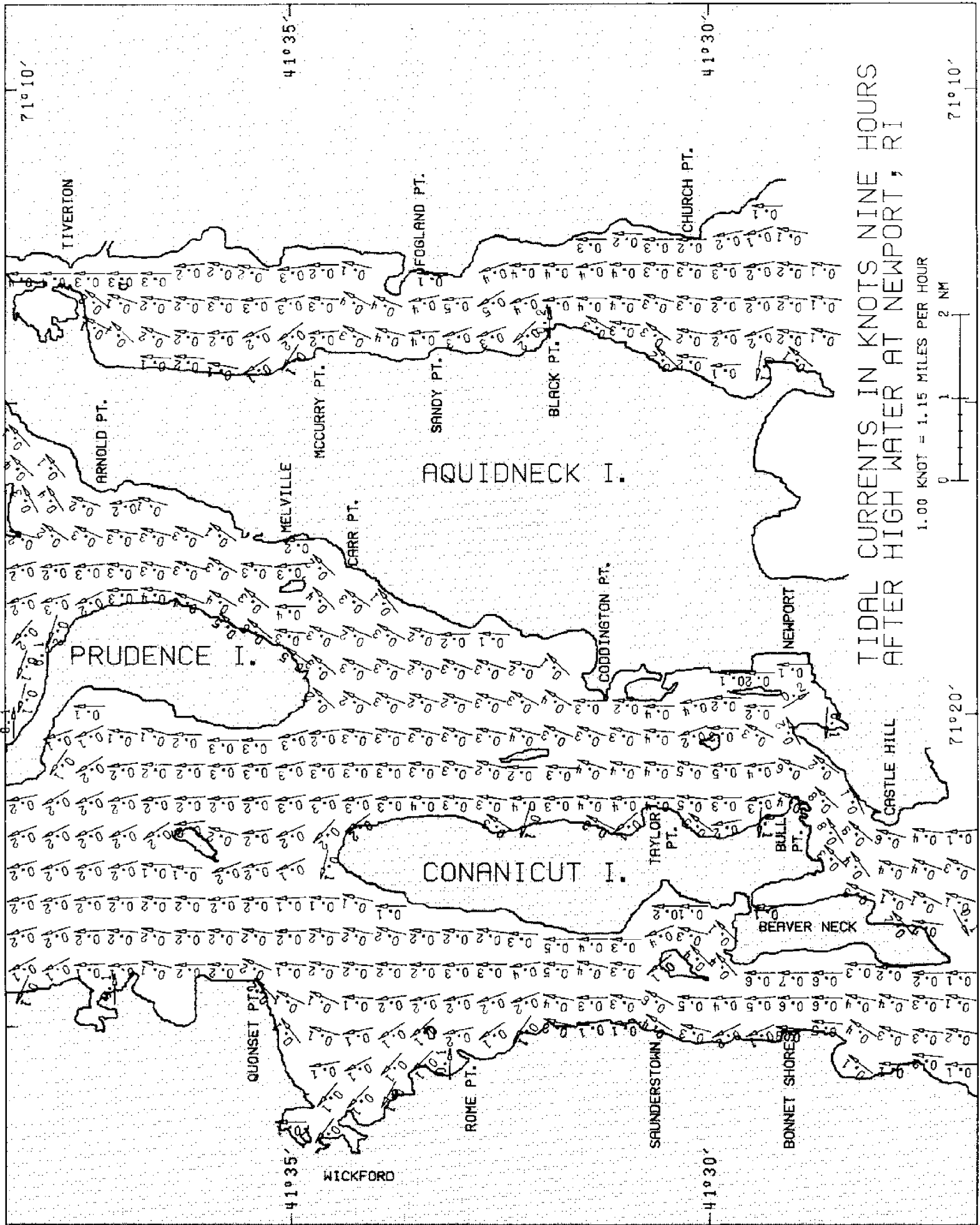


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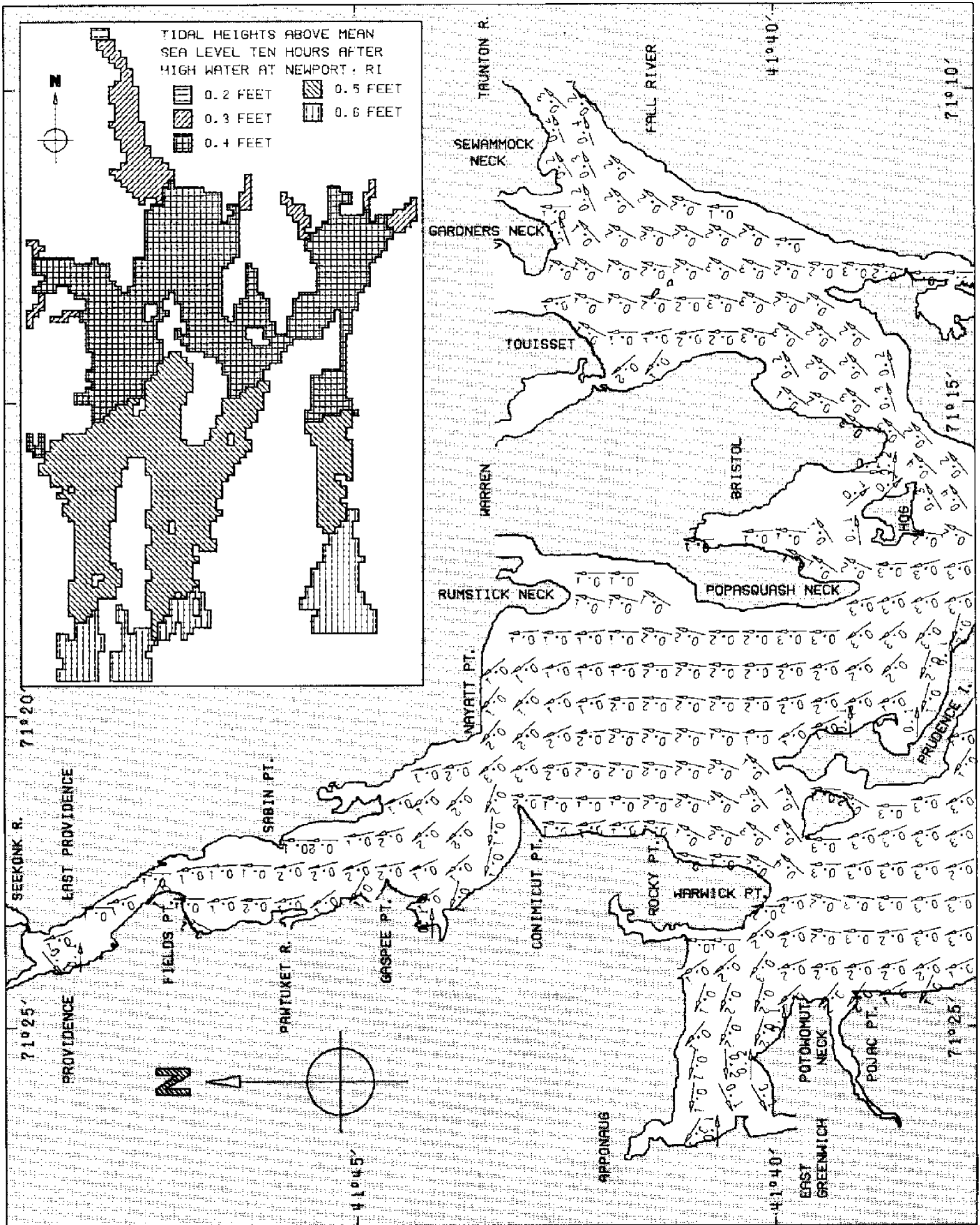
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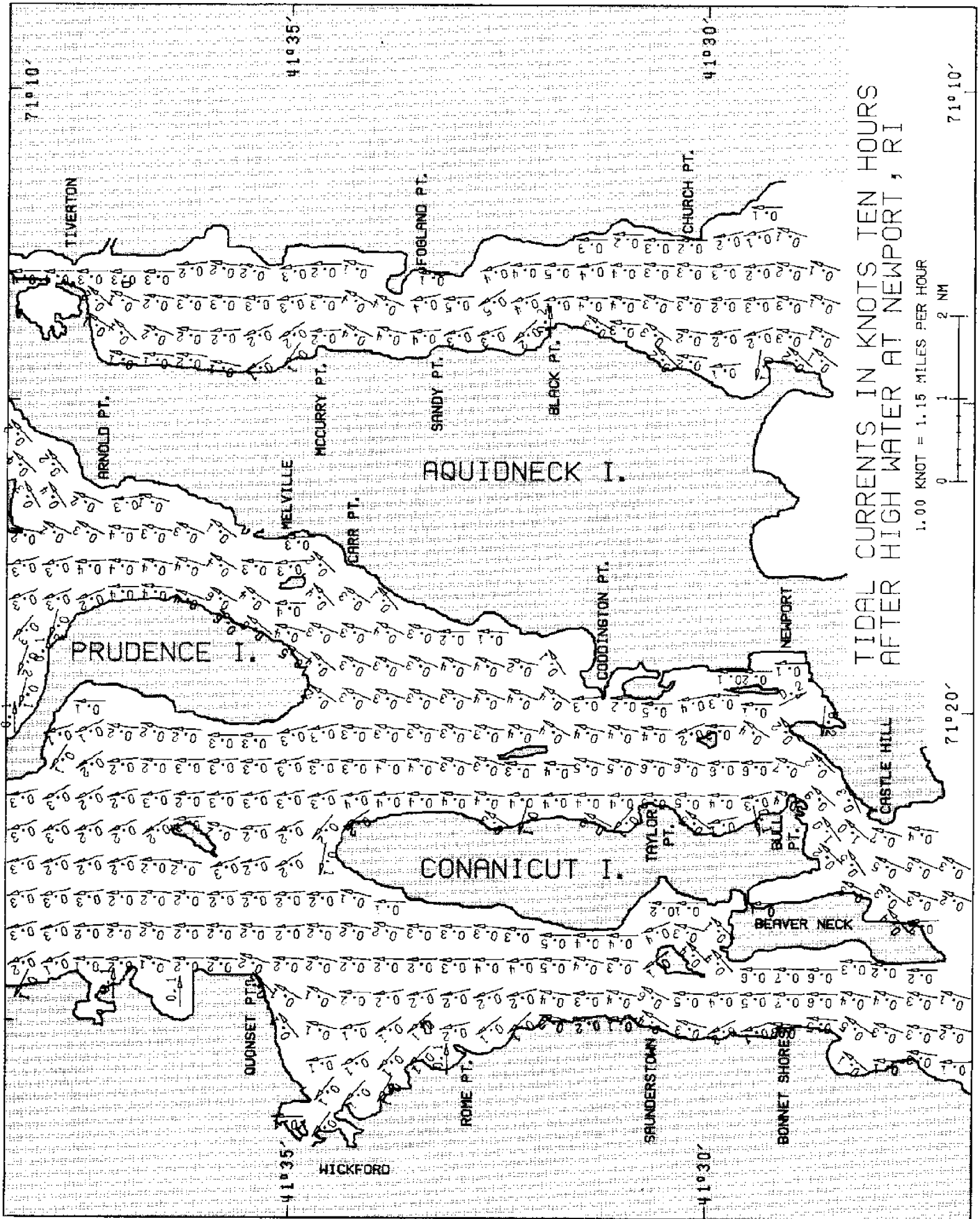






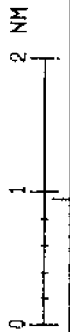
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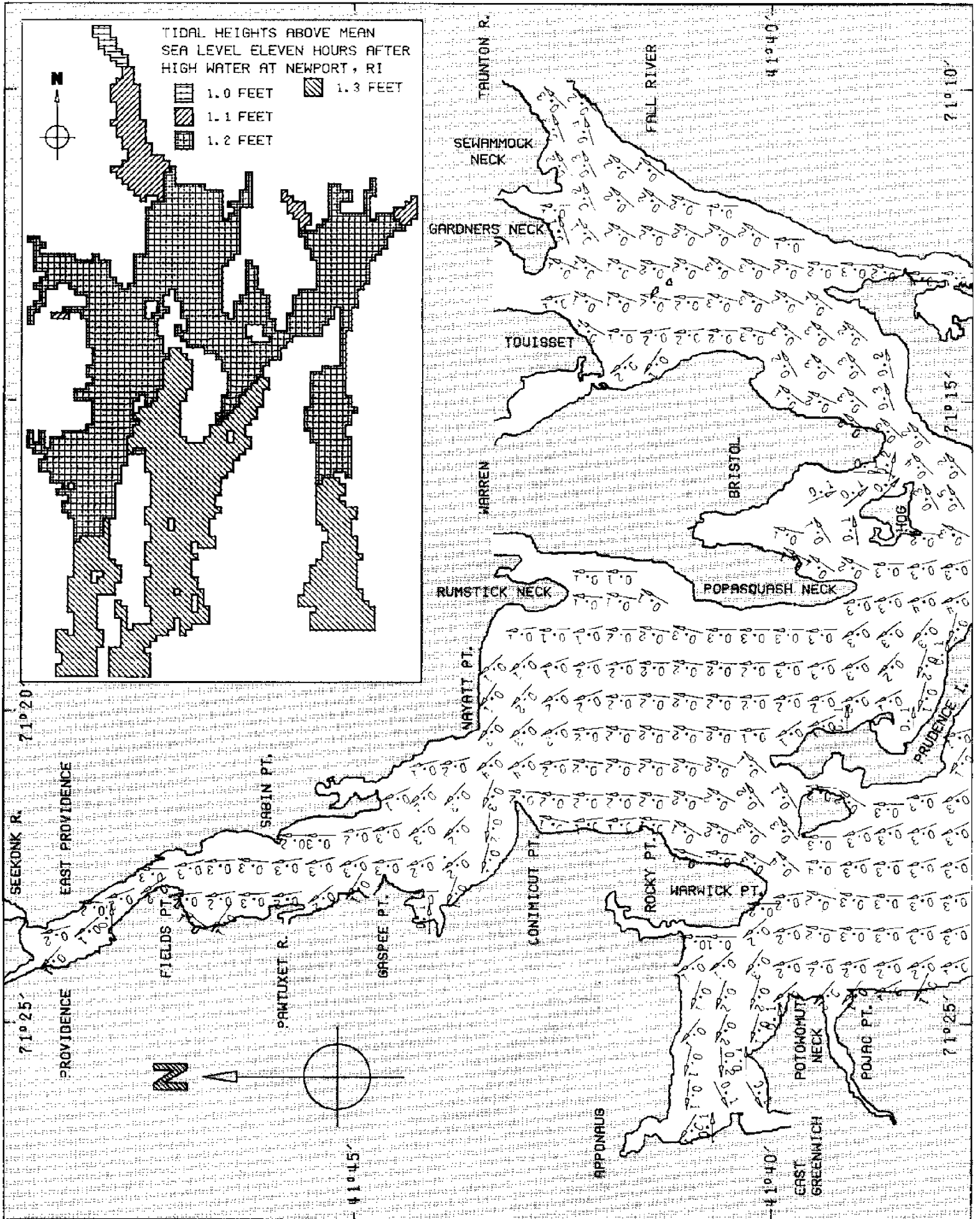


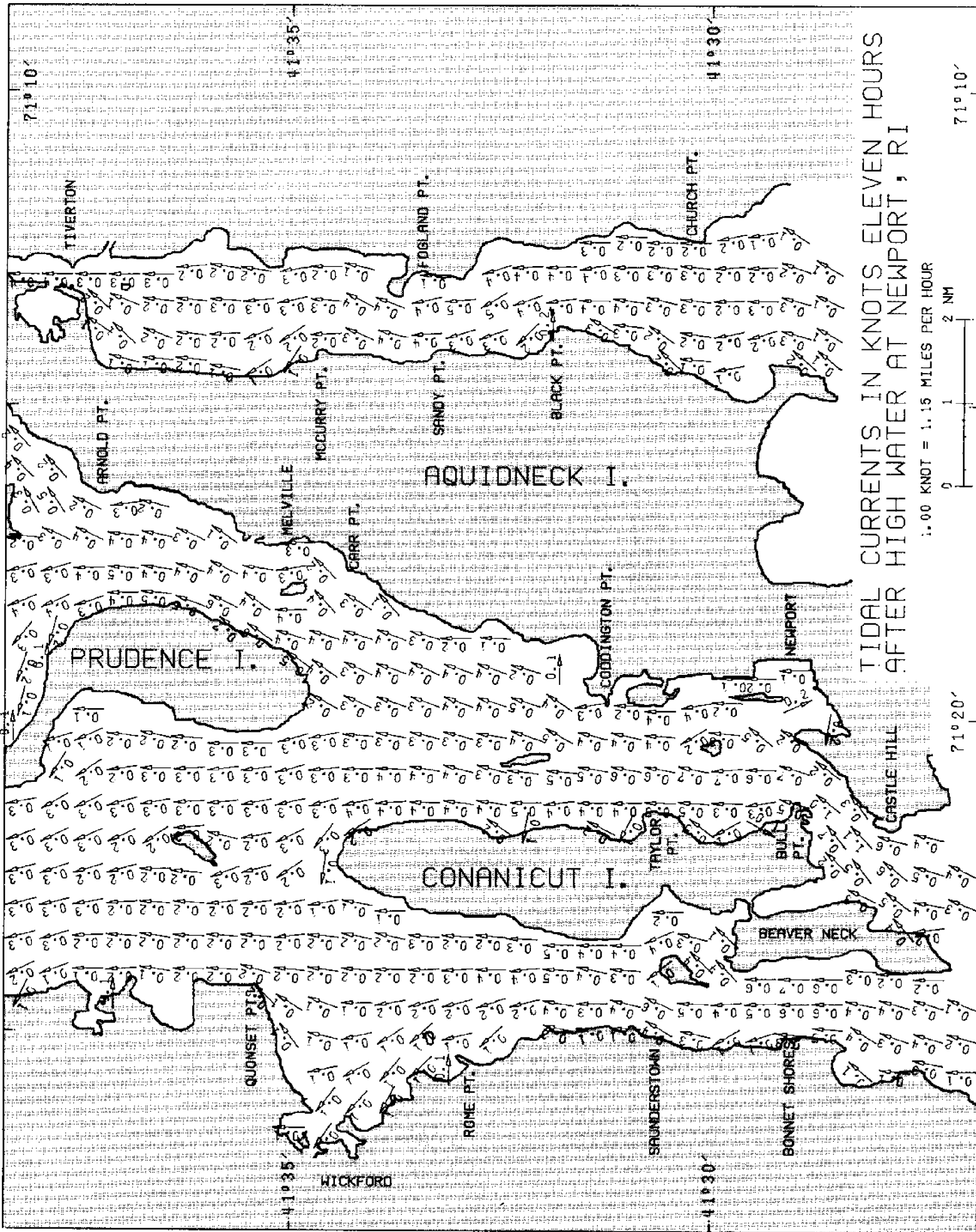
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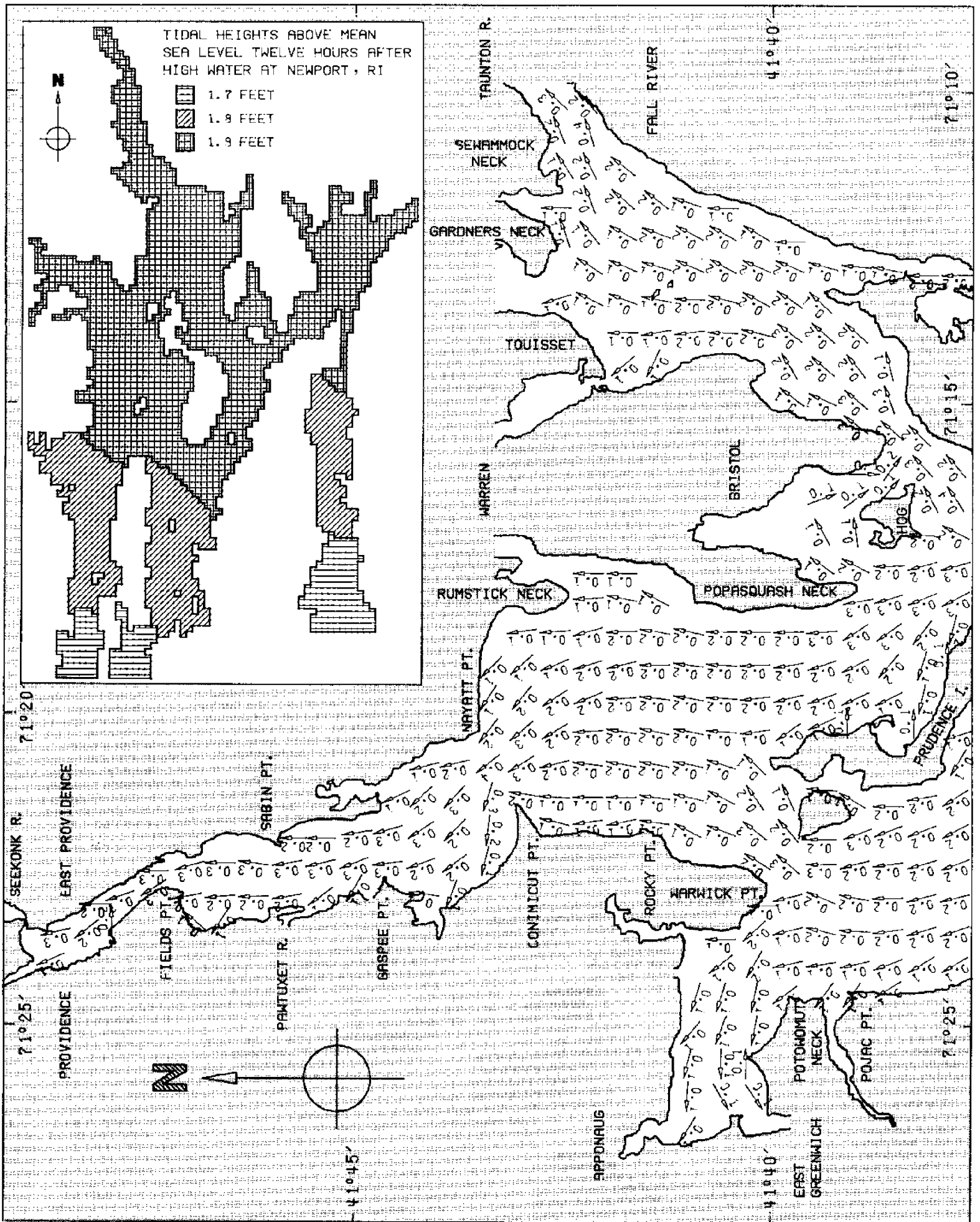
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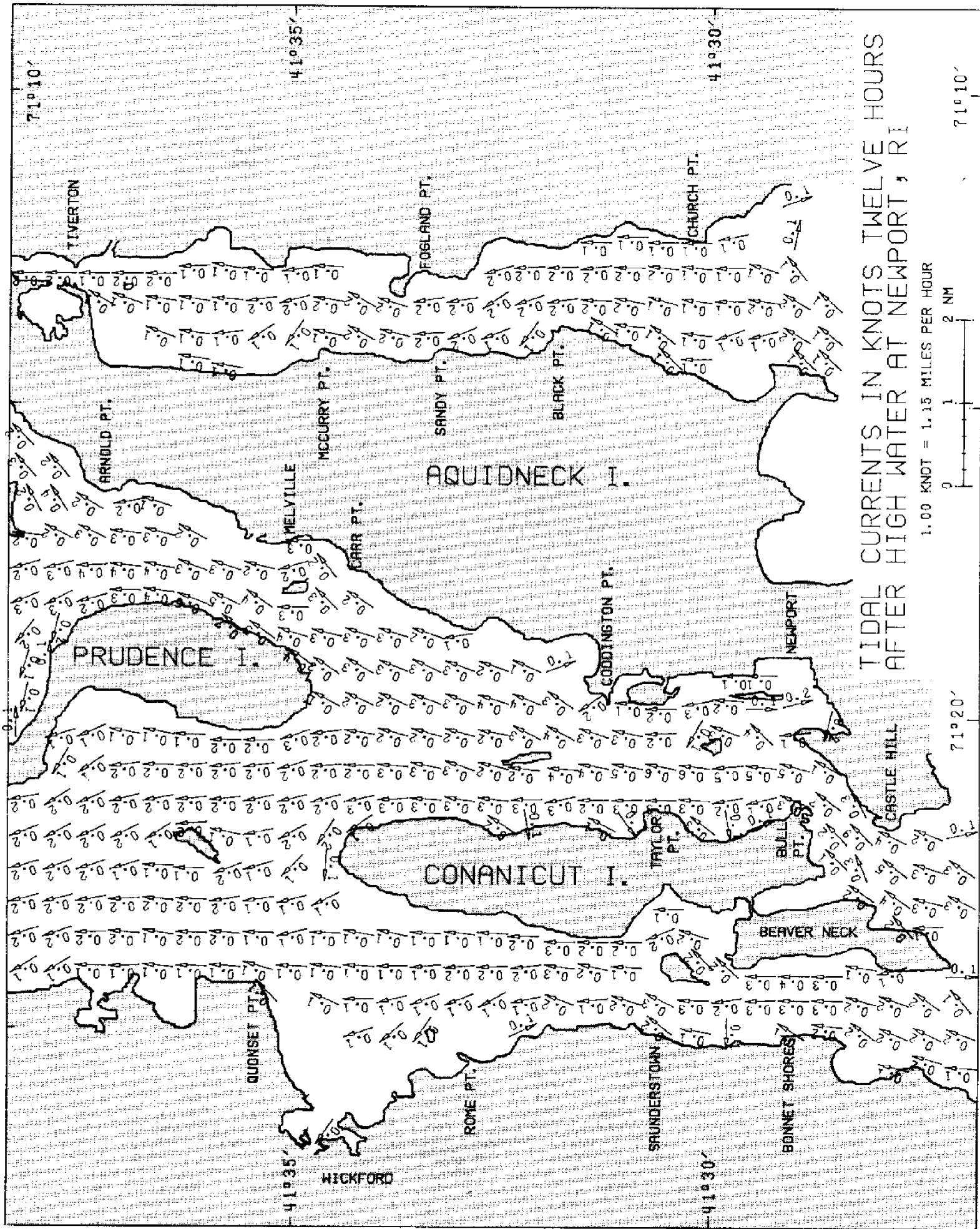






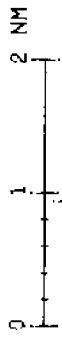






TIDAL CURRENTS IN KNOTS TWELVE HOURS AFTER HIGH WATER AT NEWPORT, RI

1.00 KNOT = 1.15 MILES PER HOUR





















--- September ---

Time (EST) of High Tide and Range (ft) at Newport, R.I.

Table with columns for years 1990-1999 and rows for days 1-30. Each row lists high tide times and ranges (Time Rng) for each year.





