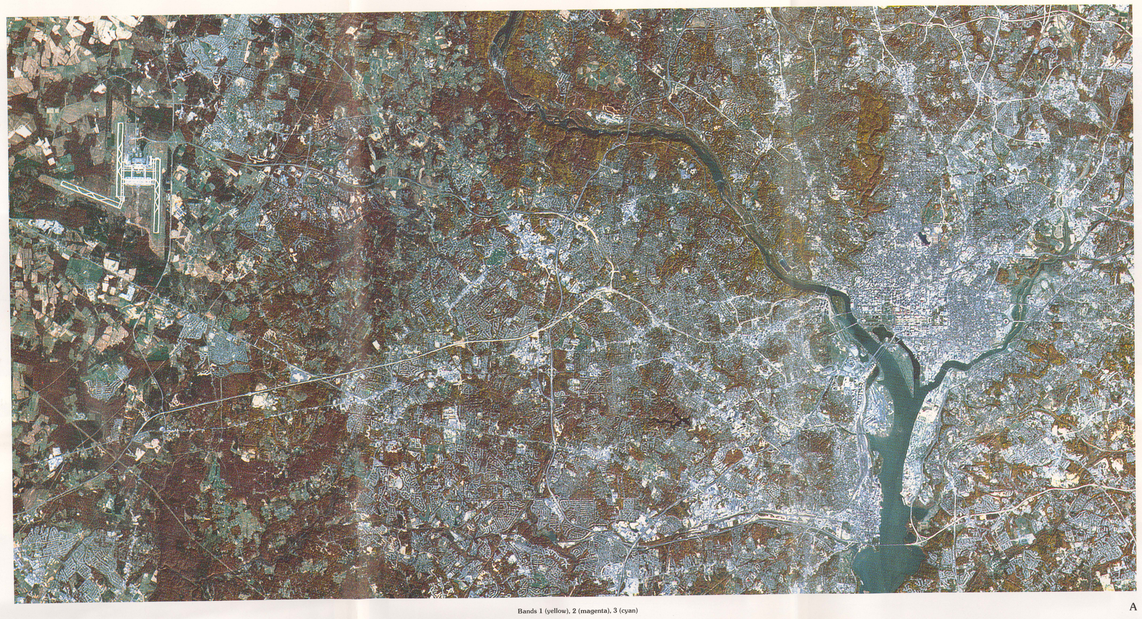
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

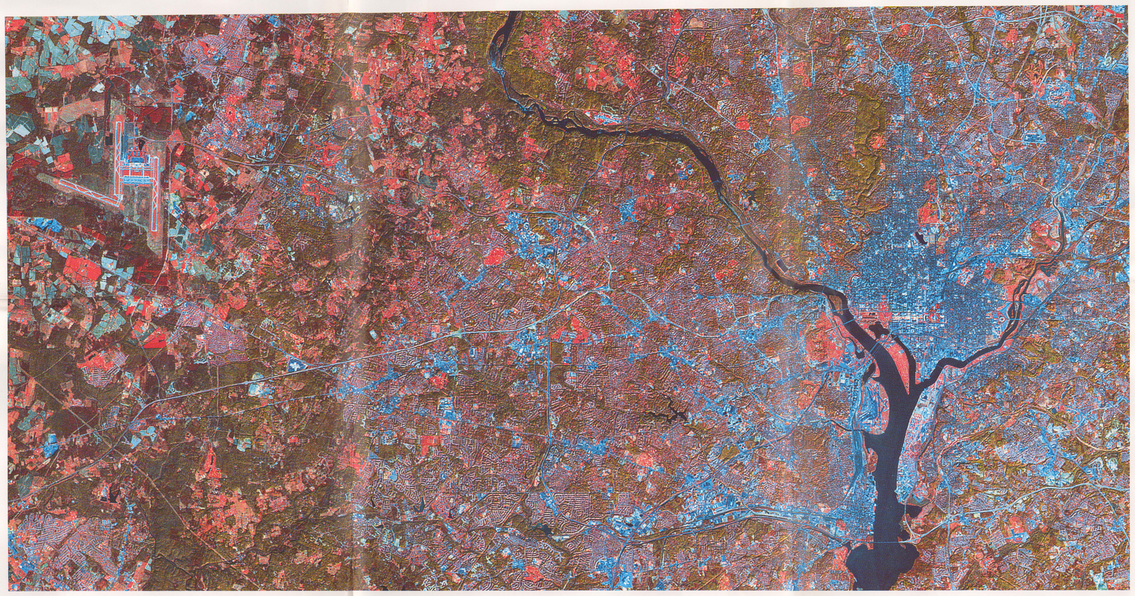
LANDSAT THEMATIC MAPPER (TM) COLOR COMBINATIONS

Washington, D. C. and Vicinity



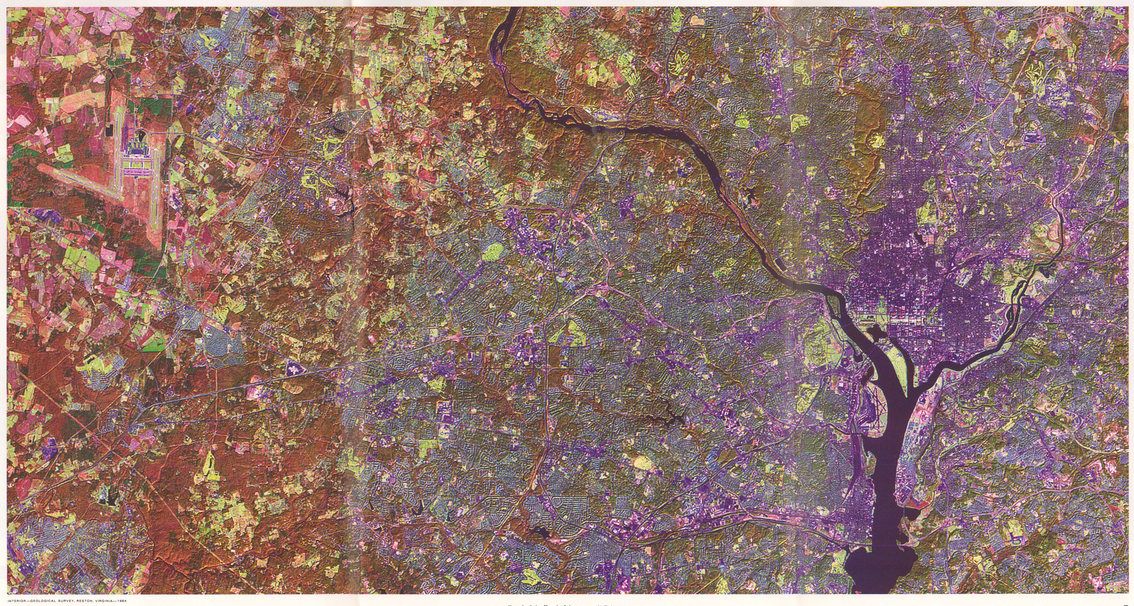
Bands 1 (yellow), 2 (magenta), 3 (cyan)

A



Bands 1 (yellow), 3 (magenta), 4 (cyan)

B



Bands 1 (yellow), 4 (magenta), 5 (cyan)

C

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1984



WASHINGTON, D. C. USGS-EDC TM 8209 01

Band 1, 0.45–0.52 μm

B/W-1



WASHINGTON, D. C. USGS-EDC TM 8209 01

Band 2, 0.52–0.60 μm

B/W-2



WASHINGTON, D. C. USGS-EDC TM 8209 01

Band 3, 0.63–0.69 μm

B/W-3



WASHINGTON, D. C. USGS-EDC TM 8209 01

Band 4, 0.76–0.90 μm

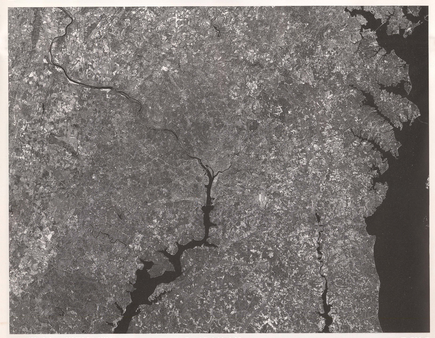
B/W-4



WASHINGTON, D. C. USGS-EDC TM 8209 01

Band 5, 1.55–1.75 μm

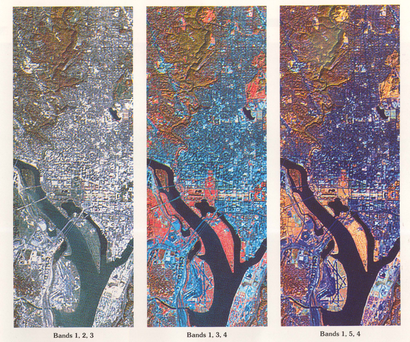
B/W-5



WASHINGTON, D. C. USGS-EDC TM 8209 01

Band 7, 2.08–2.35 μm

B/W-7



Bands 1, 2, 3 | Bands 1, 3, 4 | Bands 1, 5, 4

Produced by the U.S. Geological Survey

APRIL 1984

LANDSAT THEMATIC MAPPER (TM) COLOR COMBINATIONS

On July 16, 1982, NASA launched Landsat 4 and on March 1, 1984 Landsat 5, both at a nominal orbital altitude of 705 km (440 st. mi.). During March 1984 the U. S. Geological Survey published a 1:100,000-scale Satellite Image Map titled Washington, D.C. and Vicinity. This map was developed from imagery obtained from the Thematic Mapper (TM) of Landsat 4 on November 2, 1982. A paper describing the preparation of this map has been published and is a separate part of this I-series report. The map itself is sold separately by the U. S. Geological Survey.

The TM involves seven wave bands of which six were considered possible candidates for providing the data for a colored image map. The one thermal band (6) was of lesser resolution and not considered suitable for this project. The number of possible combinations (20) and permutations (120) offers a real challenge to the mapmaker who must make what is hopefully the optimum selection for the image map. Since the optimum selection for the image map is largely a matter of personal choice, the matter deserves further documentation as presented herein. This graphic includes the following:

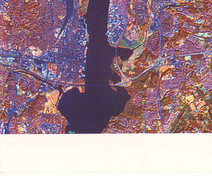
FRONT SIDE

- The six bands each printed out in black-and-white form at 1:553,000 scale.
- Four 1:100,000-scale color renditions of a portion of the area printed in yellow (Y), magenta (M), and cyan (C) respectively.

  A. bands 1, 2, and 3
  B. bands 1, 3, and 4
  C. bands 1, 4, and 5
  D. bands 1, 5, and 4

  The final rendition (D) changes the usual color sequence in that band 5 is now printed in magenta and band 4 in cyan. This results in grass appearing yellow rather than red but in so doing provides color contrast perhaps superior to any of the other renditions.

AREA OF COVERAGE



Area covered at 1:553,000 scale

Area enlarged to 1:100,000 scale

REVERSE SIDE

- All 20 three-color combinations, obtained from the six wave bands of the Landsat TM. These each cover the entire study area at a scale of 1:553,000. They are numbered 1 through 20 based on their optimum index factor (see OIF listing below and written report).
- Images 21 through 24 display the remaining permutations possible for combination No. 1 which involves bands 1, 4, and 5. Two permutations of this combination (1, 4, 5 and 1, 5, 4) are already displayed as image C and D on the front side. The remaining permutations are No. 21 (4, 5, 1), No. 22 (4, 1, 5), No. 23 (5, 1, 4), and No. 24 (5, 4, 1).

OPTIMUM INDEX FACTOR

OIF Rank	Combination Y M C
1	(1, 4, 5)
2	(3, 4, 5)
3	(2, 4, 5)
4	(1, 4, 7)
5	(4, 5, 7)
6	(1, 3, 4)
7	(3, 4, 7)
8	(1, 5, 7)
9	(1, 3, 5)
10	(2, 4, 7)
11	(1, 2, 5)
12	(1, 2, 4)
13	(2, 5, 7)
14	(3, 5, 7)
15	(2, 3, 4)
16	(1, 3, 5)
17	(1, 3, 7)
18	(1, 2, 7)
19	(2, 3, 7)
20	(1, 2, 3)

THEMATIC MAPPER WAVE BANDS

Band 1	visible (blue)	0.45–0.52 μm
Band 2	visible (green)	0.52–0.60 μm
Band 3	visible (red)	0.63–0.69 μm
Band 4	near IR	0.76–0.90 μm
Band 5	near IR	1.55–1.75 μm
Band 6*	thermal	10.4–12.5 μm
Band 7	near IR	2.08–2.35 μm

*Band 6 was not used in this project.

FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092

Information on indexing, cost, and availability of Landsat imagery may be obtained from NOAA Landsat Customer Services, USGS EROS Data Center, Sioux Falls, South Dakota 57198

LOCATION DIAGRAM



Bands 1 (yellow), 5 (magenta), 4 (cyan)

D