Basis for Request: Needed Supply

- Projected need in 2035 = 42.5 MGD (Ave. Day)
- Under DNER rules, new plan is required when demand = 80 percent of supply. The argument by K-C was that the 80 percent rule meant the supply was inadequate when demand = 0.8 x supply. Therefore

  0.8 x Requested Supply = 42.5

  Requested Supply = 53 MGD (Ave. Day)

Shortfall

- Requested supply = 53 MGD Avg. Day
- Existing within-basin supply = 31 MGD
- Shortfall = 22 MGD Average Day
- Max Day = 1.6 Average Day
- 36 MGD maximum day

Request

- 10 MGD max day IBT from Yadkin
- Balance to come from Catawba
  - 26 MGD max day if the IBT from Yadkin is granted
  - Otherwise, 36 MGD from Catawba

Decision by EMC

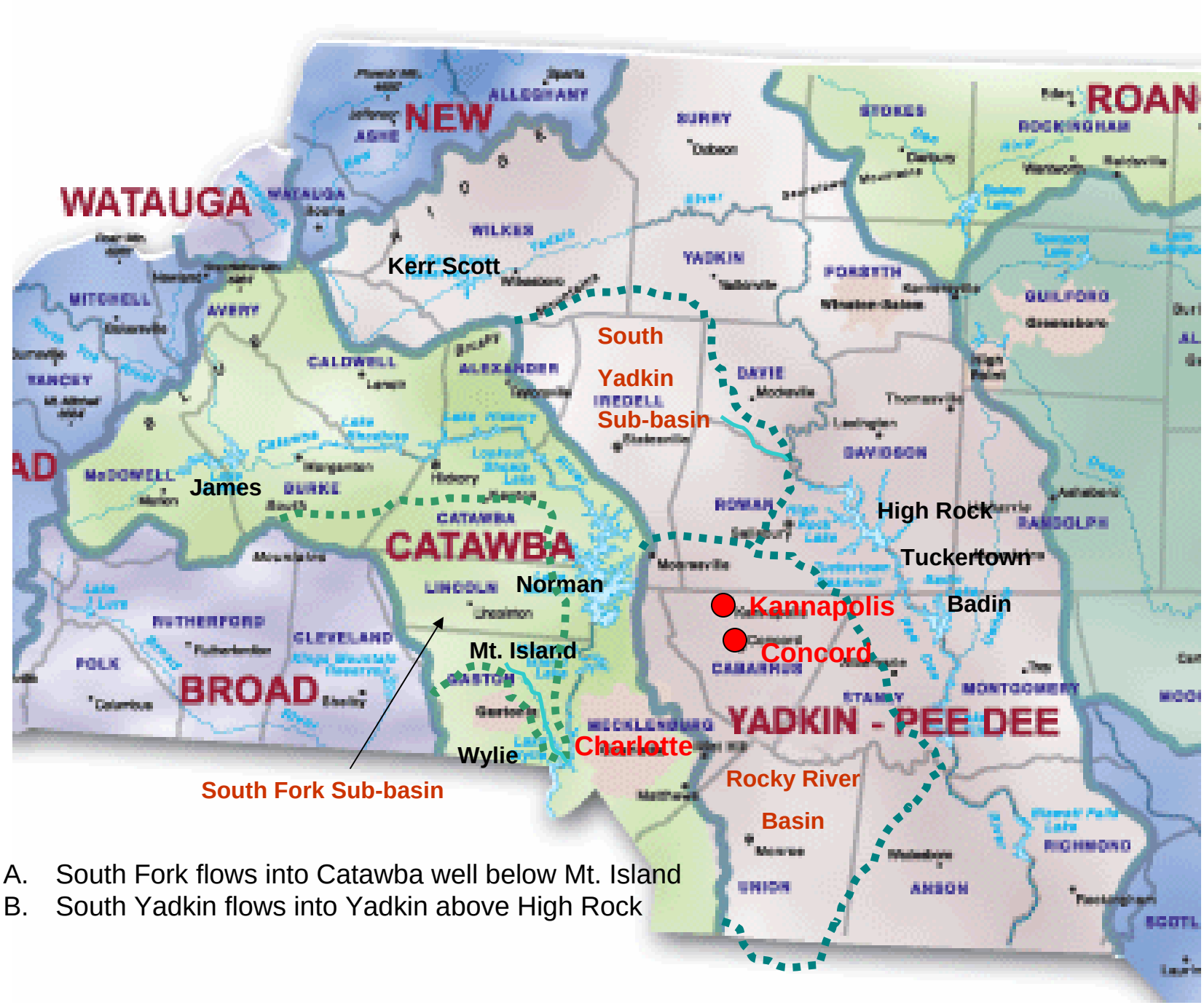
- Grant 10 MGD (max day) from Catawba via Charlotte-Mecklenburg Utilities
- Grant 10 MGD (max day) from Yadkin
- Subject to several conditions
  - Conservation policies in Catawba and Yadkin apply to Kannapolis-Concord
  - Changing needs in Catawba Basin
    - built in review after 20 years;
    - Capacity Use Act supercedes IBT certificate

Factors Leading to Recommendation: Calculation of Shortfall

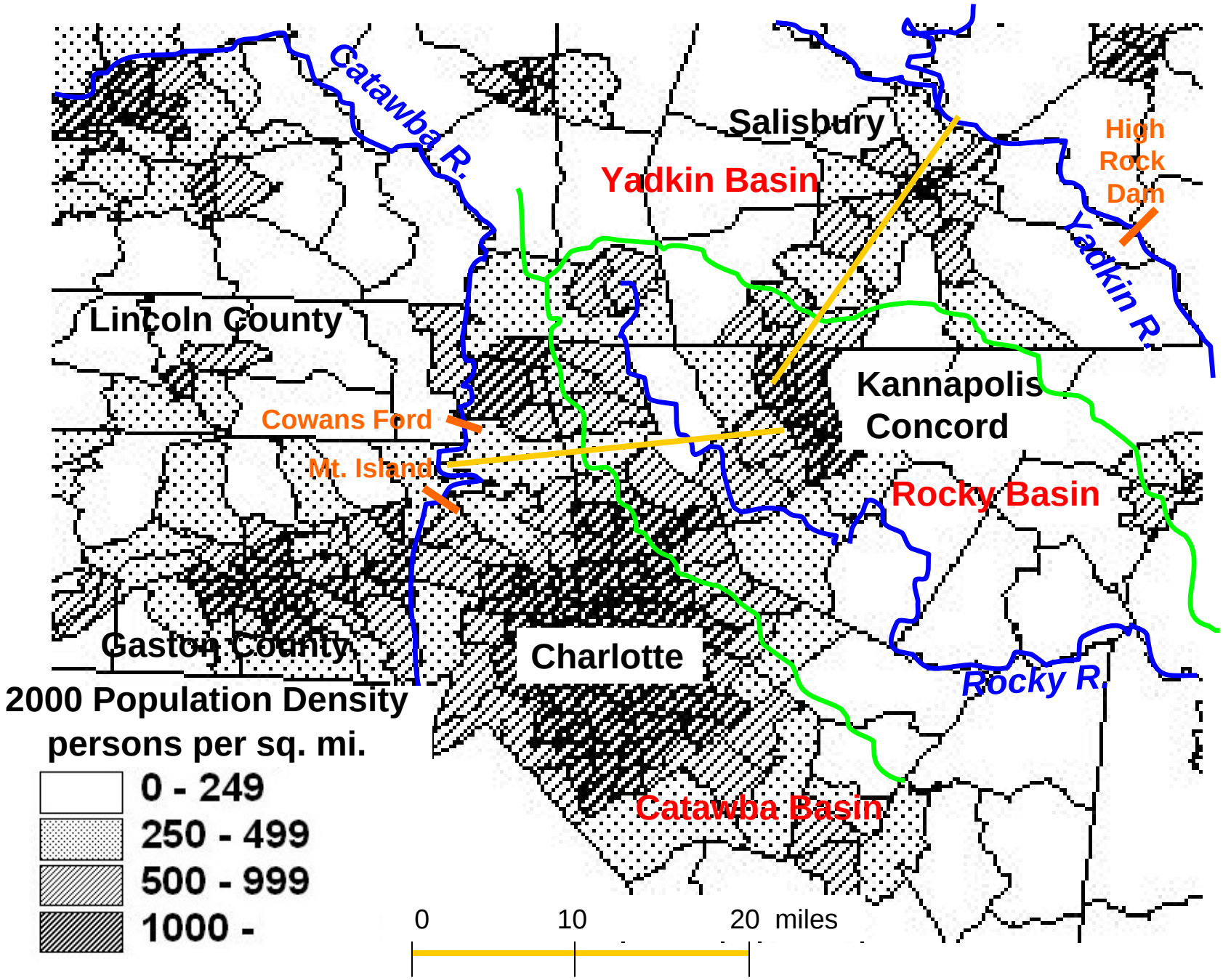
- Rejected argument based on 80 percent rule which put need at 53 MGD instead of the 42.5
- average daily need adjusted to
  42.5 MGD – 31 MGD = 11.5 MGD
- Maximum day demand = 11.5 x 1.6 = 18.4 MGD

Factors Leading to Recommendation: Relative Impacts on Donor Basins

- Transfers in excess of 10 MGD begin to have impacts on Catawba (even they are not major)
- Water availability in Yadkin at High Rock approximately twice that in Catawba at Mt. Island
- Future needs (30-years hence) in all three basins are uncertain



A. South Fork flows into Catawba well below Mt. Island
B. South Yadkin flows into Yadkin above High Rock


Catawba R.
Salisbury
Yadkin Basin
High Rock Dam
Yadkin R.
Lincoln County
Kannapolis
Concord
Cowans Ford
Mt. Island
Rocky Basin
Gaston County
Charlotte
Rocky R.
Catawba Basin
2000 Population Density
persons per sq. mi.
0 - 249
250 - 499
500 - 999
1000 -
0
10
20 miles

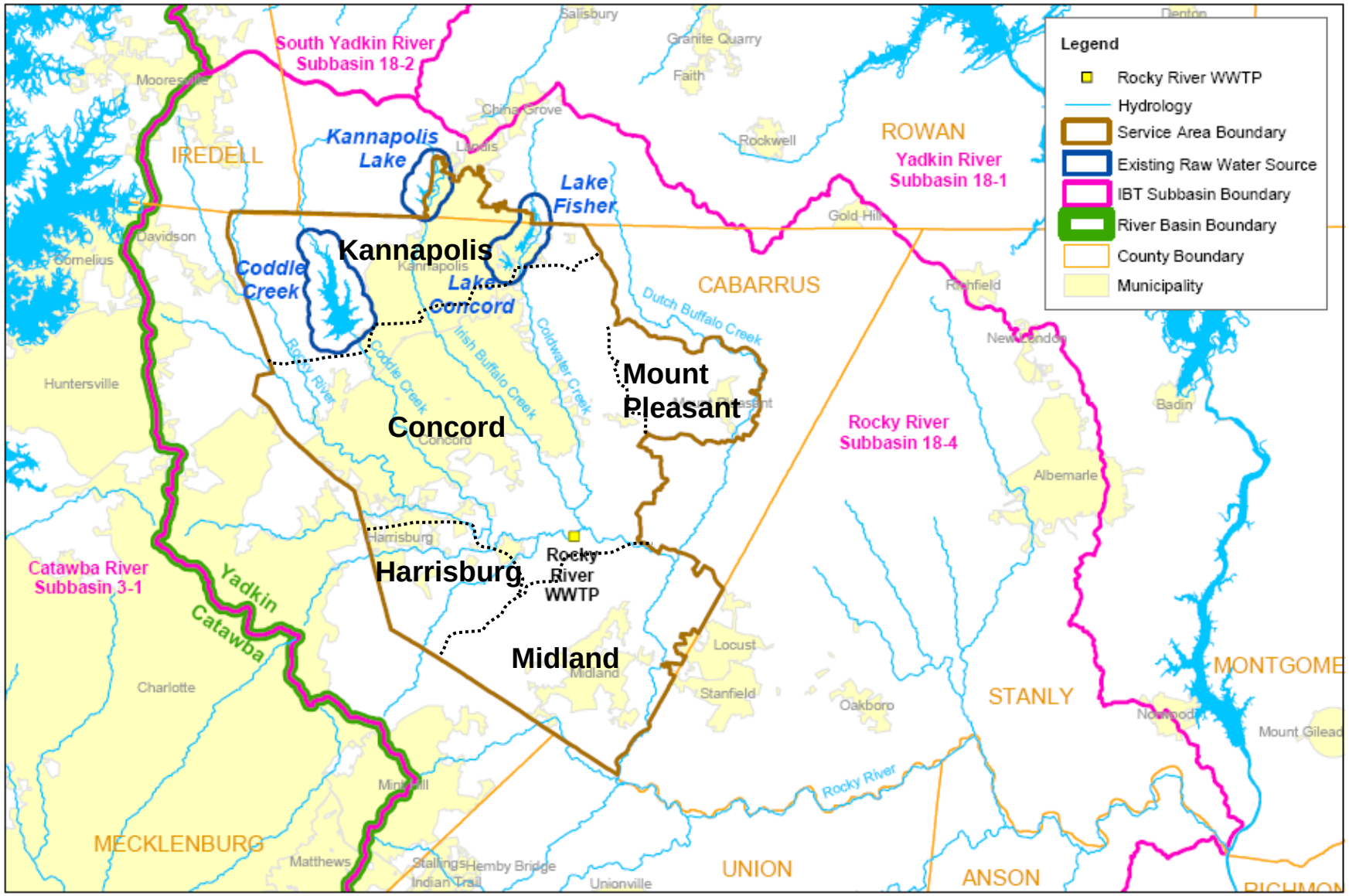


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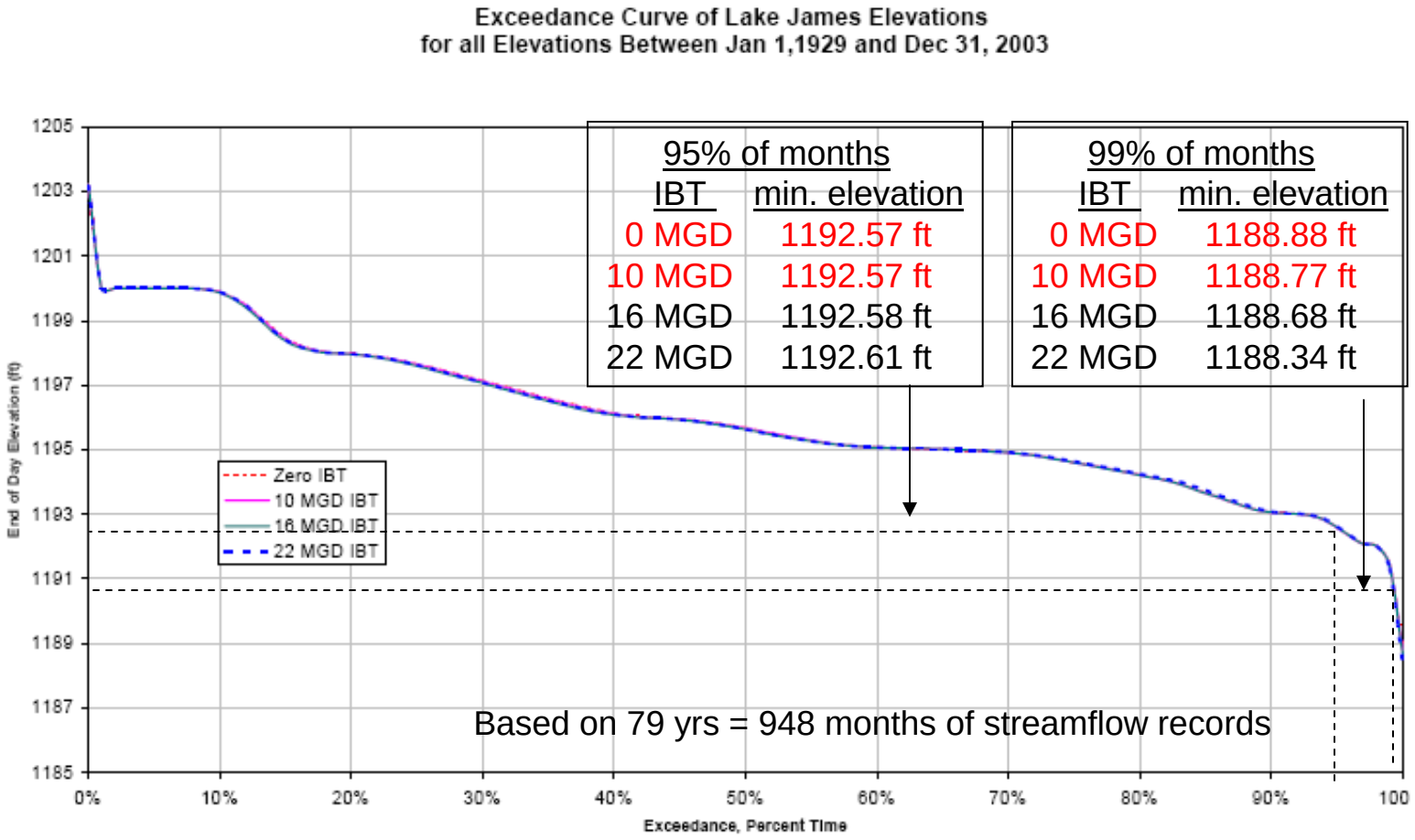
Figure ES-1
IBT Receiving Basin Service Area and Existing Raw Water Sources
Concord/Kannapolis IBT RFEIS

IMPACT ON CATAWBA BASIN

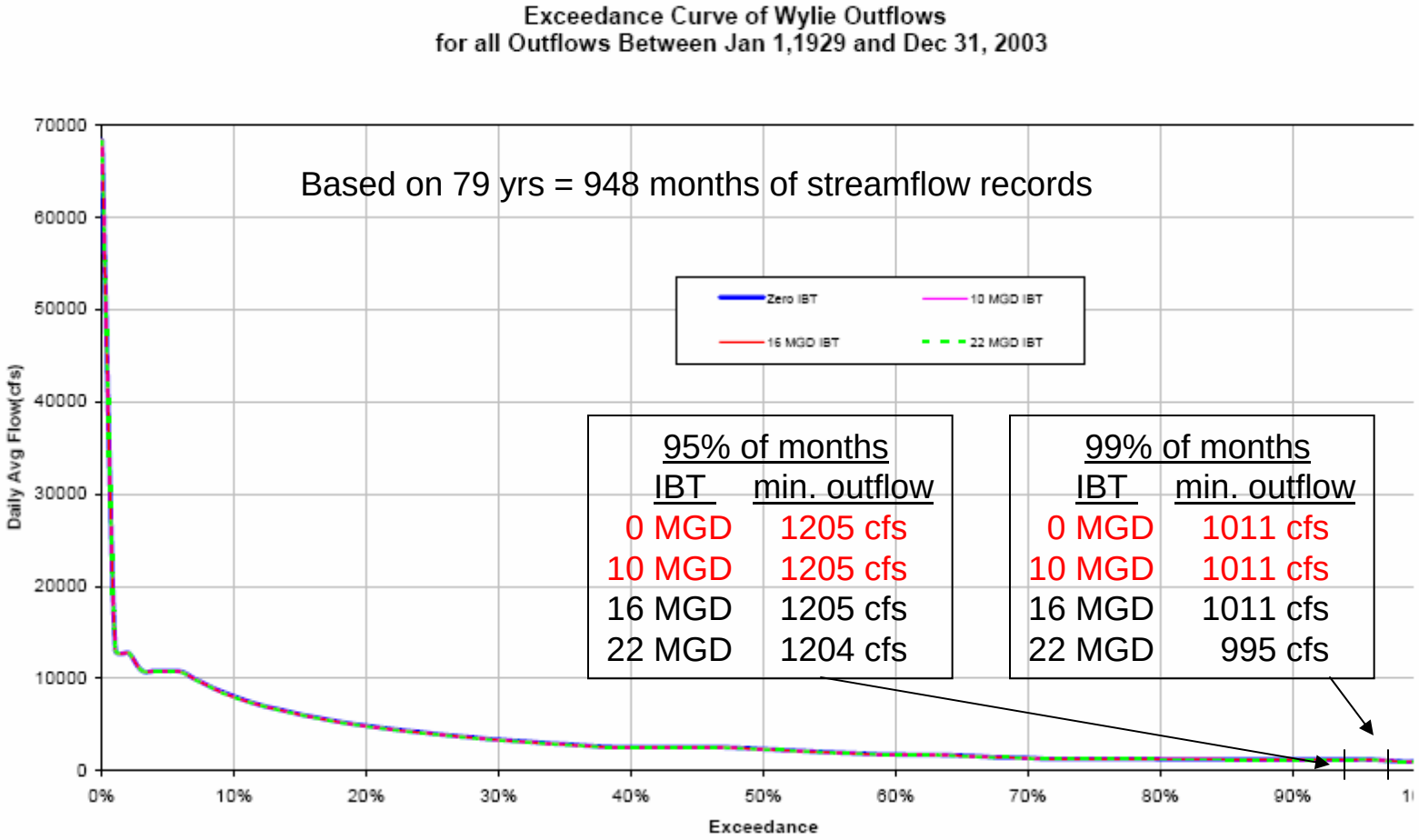
- IBT Scenarios
  (1) Zero (2) 10 MGD (3) 16 MGD (4) 22 MGD
- Summary of performance for 79 years of streamflow records with projected needs in Catawba Basin
- Worst case in record 2000-2002
- Simplified check on credibility of model

FIGURE ES-4
Lake James Elevation Duration Curve
Concord/Kannapolis IBT RFEIS



Summary of performance over 79 years of streamflow records

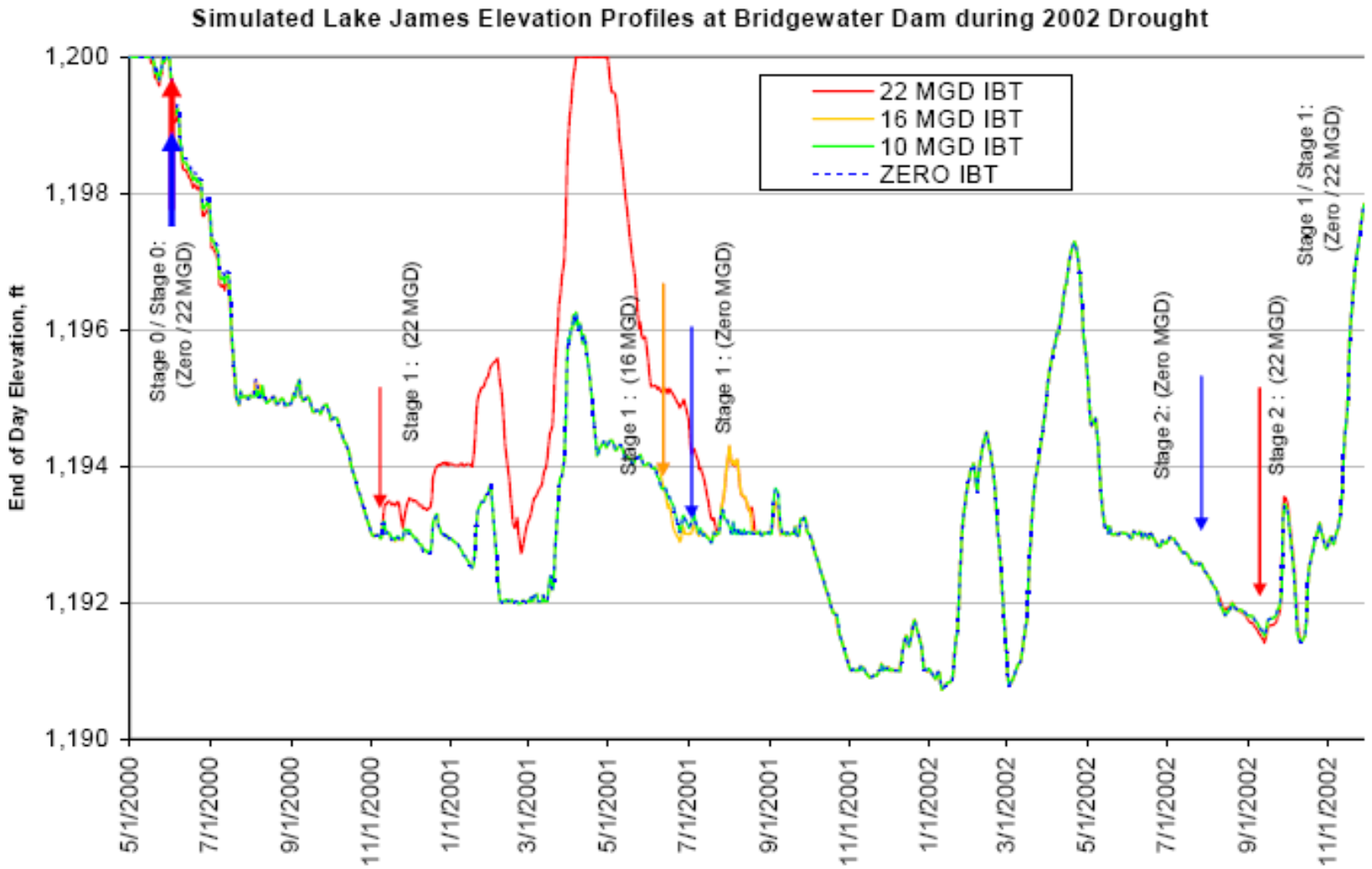
FIGURE ES-5
Lake Wylie Outflow Duration Curves
Concord/Kannapolis IBT RFEIS



Summary of performance over 79 years of streamflow records:

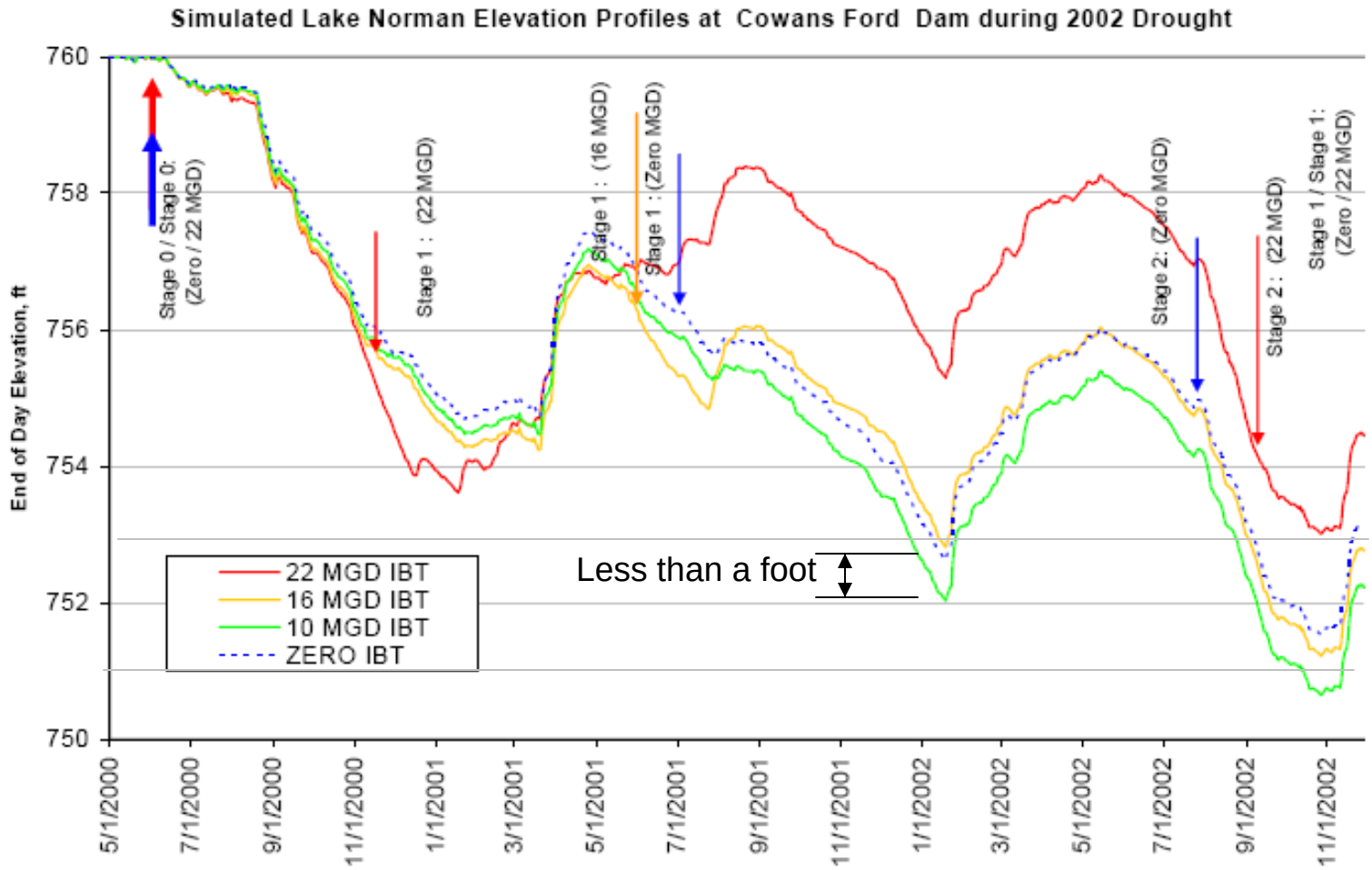
Outflows from Lake Norman

FIGURE ES-6
Lake James Elevation during 2001-02 Drought
Concord/Kannapolis IBT RFEIS



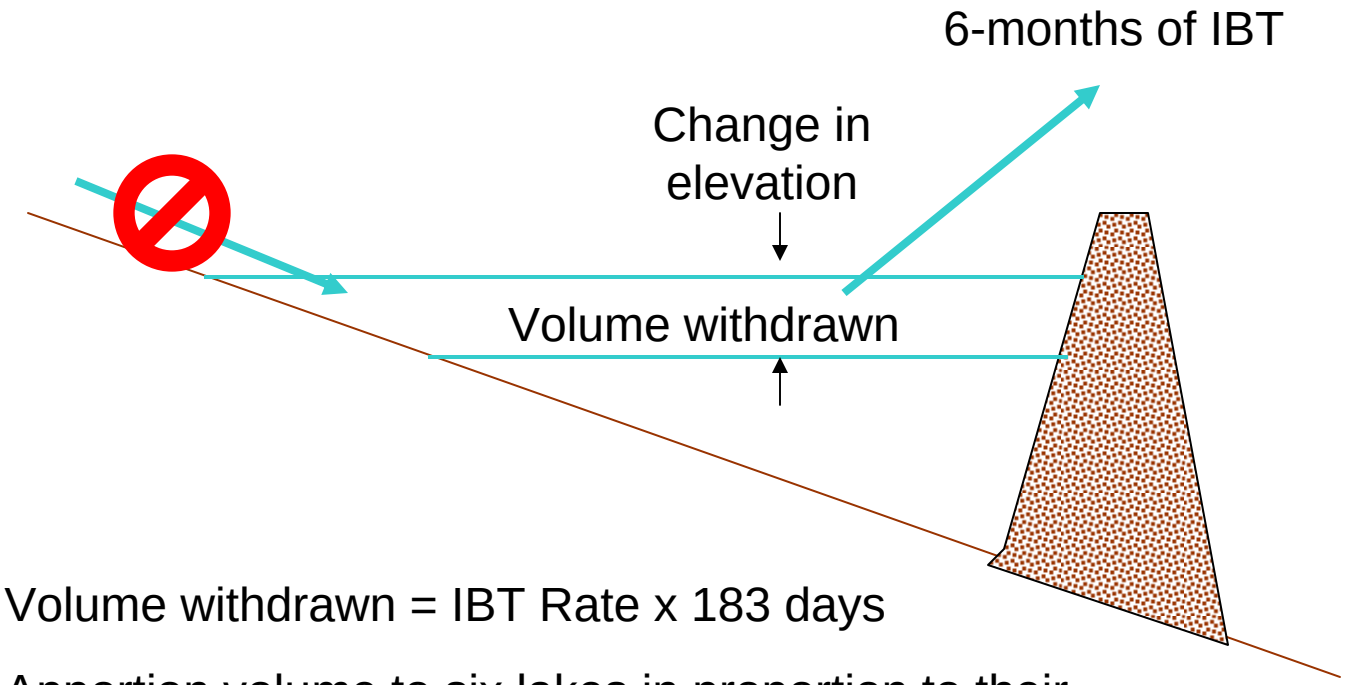
Performance under Worst Drought of Record: Lake James Reservoir Levels

FIGURE ES-7
Lake Norman Elevation during 2001-02 Drought
Concord/Kannapolis IBT RFEIS



Performance under Worst Drought of Record: Lake Norman Reservoir Levels

Simple Check –
Upper Bounds on Changes in Elevation



1) Volume withdrawn = IBT Rate x 183 days
2) Apportion volume to six lakes in proportion to their storage levels at 75 and 90 percent full.
3) Calculate change in elevation = volume withdrawn/surface area

Results

TABLE 2-14
Simple Analysis based on Stage-Storage Curves and Assumption of No Inflow
Concord/Kannapolis IBT RFEIS

	Reduction in Reservoir Elevations (inches) for Transfers of 10, 16, and 22 mgd					
	10 mgd		16 mgd		22 mgd	
	Initial Storage Conditions					
Reservoir	90% storage	75% storage	90% storage	75% storage	90% storage	75% storage
James	2.1	2.3	2.1	3.7	4.5	5.0
Rhodhiss	1.1	1.2	1.1	1.9	2.4	2.6
Hickory	1.4	1.6	1.4	2.5	3.0	3.5
Lookout Shoals	1.3	1.3	1.3	2.1	2.8	2.9
Norman	1.4	1.7	1.4	2.6	3.1	3.6
Mountain Island	0.9	1.0	0.9	1.6	2.1	2.3

IMPACT ON YADKIN BASIN:
Summary of Performance
over 75 Years of Streamflow Records

FIGURE ES-8
High Rock Lake Level Duration Curves – Maximum Daily Demands
Concord/Kannapolis IBT RFEIS

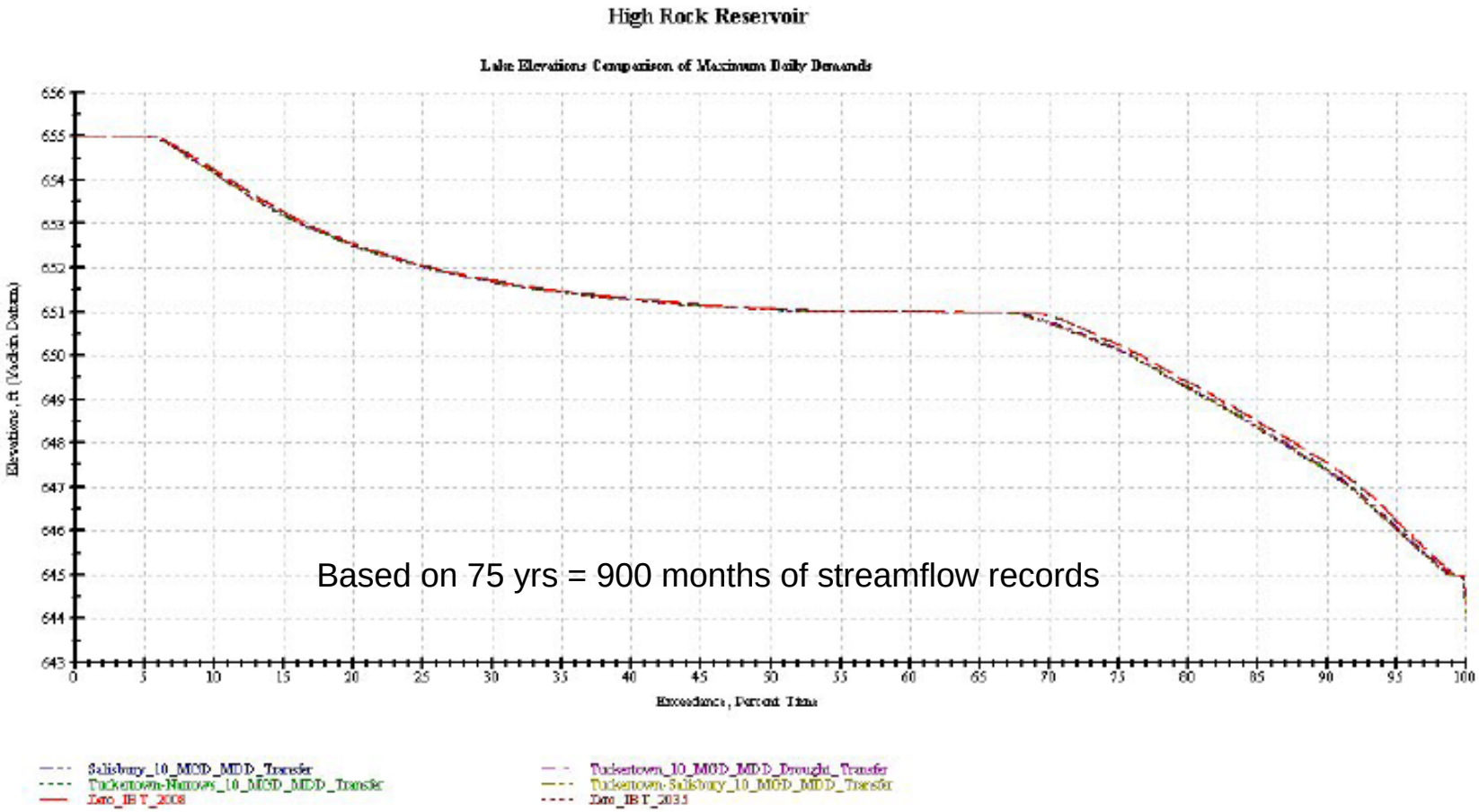
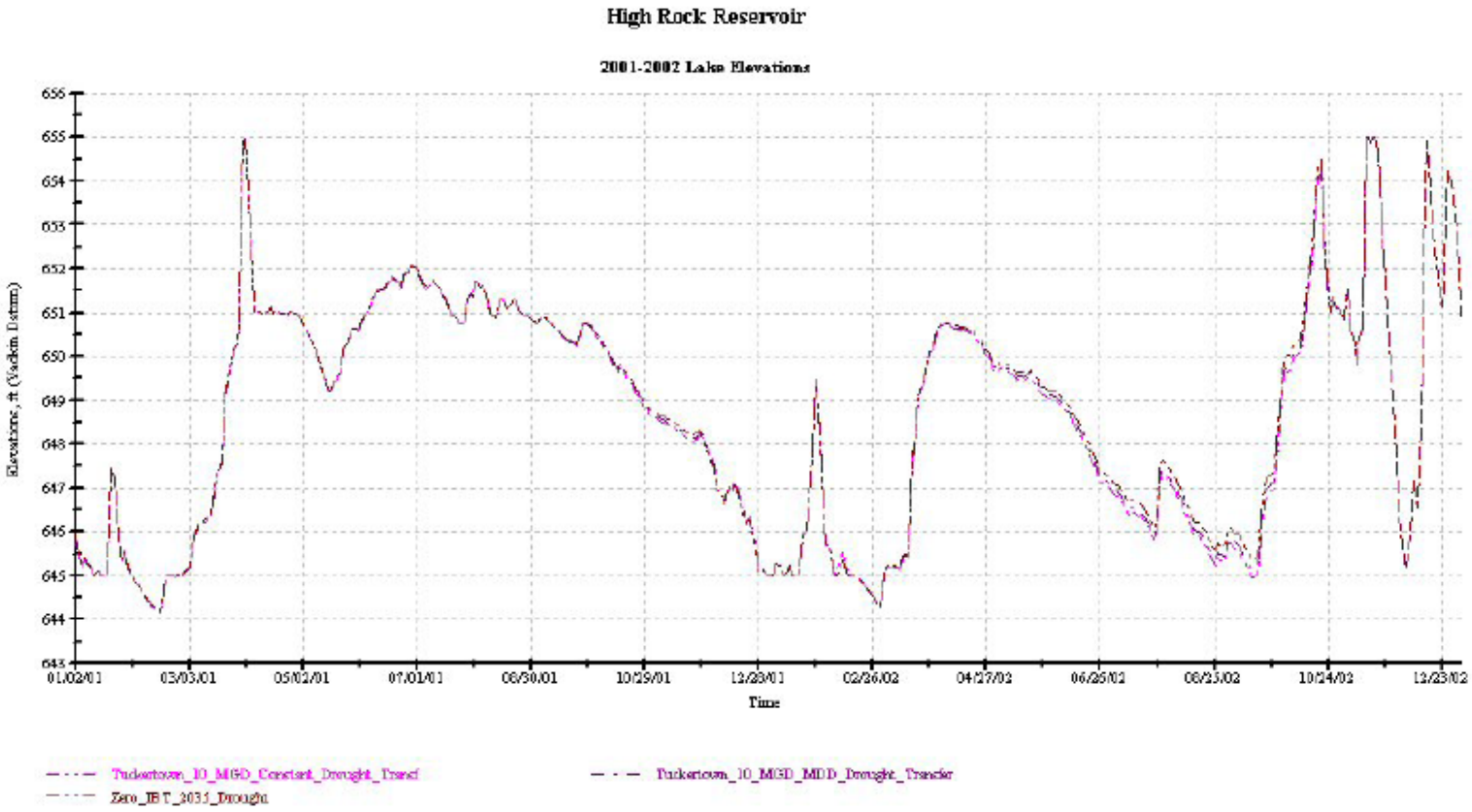


FIGURE ES-10
High Rock Reservoir 2001-2002 Drought Lake Levels
Concord/Kannapolis IBT RFEIS



Simple Check – Upper Bounds on Changes in Elevation

Storage, % of Available Capacity	Drawdown in inches resulting from 183 days of 10 MGD IBT		
	High Rock	Narrows	Tillery
100%	2.7	3.6	1.6
75%	3.3	3.9	1.7
50%	4.4	4.4	1.9

Comparative Analysis

Drainage Areas and Average Flow

Location	Drainage Area	Average Flow
Catawba River at Mt. Island	1,856 sq. mi.	1,495 MGD
Yadkin River at High Rock	3,940 sq. mi.	3,208 MGD

Average June-November Unregulated Flows, cfs

Percentile (75 yrs)	Mt. Island	High Rock
Lowest	358	642
5% of years	461	875
10% of years	539	1087
25% of years	702	1468
50% of years	987	2135