APPENDIX Y
JCP DECISION TREE QUESTIONNAIRE RESPONSES

Note: responses are in green font.

Your District: We received two responses: Dallas and Beaumont

QUESTION 1
PMIS Treatment Recommendations Correspondence to Actual JCP Treatments

Objective: make sure the proposed JCP decision trees include all treatments in current use and classifies them into preventive maintenance (PM), light rehabilitation (LR), medium rehabilitation (MR), and heavy rehabilitation (HR) according to District's practices.

The information in the table below was provided to the UTSA team as guidance to correlate PMIS recommendations to real treatments. Please check if you agree with the classification, and please provide additional treatments and their levels if applicable.

JCP TREATMENT	**PMIS Level**	**"OK" if correct Correct classification if not**
Grooving and Grinding	PM	Both Districts
Joint Sealing	PM	responded
Repair of Spalled Cracks or Joints	PM	OK in all boxes
Partial depth patch	PM/ LR	
Full Depth Repair of Concrete Pavement (FDRCP)	LR	
ACP Overlay	LR	
FDRCP and ACP Overlay	MR	
Mill and ACP overlay	MR	
Unbonded Concrete Overlay	HR	
Bonded Concrete Overlay	HR	
Reconstruction	HR	
Replace 5 or less shattered slabs	LR	
Replace 6 or more shattered slabs	MR	
Dowel bar retrofit	None provided	Added by Beaumont District

QUESTION 2
Functional Class (FC) Decision Tree for Determining JCP Traffic Levels

Objective: Ensure that JCP treatment decisions by traffic level accurately reflect District's practices.

2.1. The table below, prepared by UTEP, displays the existing AADT/lane thresholds that currently separate Low and High traffic level for each functional class (see FC tree in Figure Y1). Please indicate if the existing ADT/lane thresholds are in accordance to your district practices regarding

JCP. If not, please provide the thresholds in use or value(s) most commonly used. If a distinction by traffic level within any particular FC is not used, please write "not used."

FC			ADT/ lane	Threshold OK? If not, please indicate AADT/lane threshold in use. If traffic level distinction not used for a particular FC, please indicate "not used."
Rural	1	Rural Interstate	7,500	Both districts responded OK in all rows
	2	Rural Principal Arterial (Other)	7,500	
	6	Rural Minor Arterial	3,000	
	7	Rural Major Collector	2,000	
	8	Rural Minor Collector	2,000	
	9	Rural Local	2,000	
Urban	11	Urban Principal Arterial (Interstate)	7,500	
	12	Urban Principal Arterial (Other Freeway)	7,500	
	14	Urban Principal Arterial (Other)	7,500	
	16	Urban Minor Arterial	3,000	
	17	Urban Collector	2,000	
	19	Urban Local	2,000	

2.2. If your District's strategy regarding JCP treatment decisions by FC and traffic level cannot be accurately represented by AADT/lane thresholds for each FC, please explain your district's criteria and/or strategy.

(please add space as needed)

QUESTION 3
JCP Treatments by Climatic Zone

Objective: Ensure that the JCP treatment decisions by climatic zone accurately reflect District's practices.

This research project investigates whether or not JCP treatment recommendations should differ depending on climate and traffic level combinations. The existing trees do not make that distinction, while the proposed trees do (see Figures Y1 through Y4).

3.1. Does your district routinely take into account climatic zone when prioritizing /making JCP treatment decisions? Yes_____ No_____

3.2. If yes, do the proposed trees reflect this strategy accurately?
Yes_____ No_____

3.3. If not, please recommend changes in the proposed decision trees that reflect your district's practices. Add space if needed, or edit the proposed trees if you prefer.

3.1 and 3.2: Dallas responded "yes;" Beaumont responded "no" and "not applicable."

QUESTION 4
Impacts of the Proposed JCP Trees

Objective: Ensure that the overall PMIS treatment recommendations with the updated trees accurately reflect overall treatment selections in your District.

The main differences between the proposed JCP decision trees' recommendations and the current PMIS recommendations are summarized below. Please indicate if they capture actual decisions made in your district for JCP sections. For example, if the District routinely spends less on JCP than recommended in PMIS, put "yes" in the first cell.

Recommendation/issue	**Impact with respect to existing PMIS recommendations**	**Reflects current District practices?**
Overall funds required to fully implement all JCP recommendations	Significantly decrease	Both districts responded OK in all cells Beaumont remarked that the numbers were not verified.
Total sections receiving NN recommendations	Increase around 39% for high traffic	
Total sections receiving preventive maintenance recommendation	Increase 2.5 to 3-fold	
Total sections receiving light rehabilitation recommendations (e.g., concrete patching)	Increase 1.4 to 2.6-fold	
Total sections receiving medium rehabilitation recommendations	Decrease 75%–95%	
Total sections receiving heavy rehabilitation recommendations	Decrease 90%–96%	
Number of properly patched sections with no other distresses receiving some intervention recommendation	Drops to zero	
Number of sections with nothing but FJC or LC receiving MR or HR recommendations	Drops to zero	
Distress level tolerance for NN recommendation (currently zero for all distresses)	Greater than zero in dry zones	
Ride score importance in selecting treatments	Decreases	
10 or more shattered slabs/mile and other problems, receiving HR and MR recommendations	No change	

QUESTION 5
Proposed JCP Distress Thresholds and Logical Paths

Please study Figures Y1, Y2, Y3, and Y4 and answer the questions below.

5.1. Thresholds. Please indicate any proposed decision tree threshold that may not reflect your district's practices, or that may look either too low or too high according to your experience. If possible,

please suggest thresholds or ranges distress of values. The purple legend boxes in each figure summarize the thresholds for NN recommendations for convenience.

5.2. Logical paths. Please check if any logical path does not feel "right" to you and recommend changes.

5.3. Please add any other comments or recommendations

Dallas had no comments.

Beaumont comments:

IN GENERAL, WE DO NOT SEPARATE WET FROM DRY CLIMATIC ZONES.

WE BELIEVE THE PAT ≤ 43 THRESHHOLD IS SLIGHTLY HIGH. IF A ROAD HAS A HIGH # OF PATCHES, THIS USUALLY INDICATES ISSUES WITH THE SUBBASE OR SUBGRADE BELOW & ALSO REVEALS THAT WE ARE CONTINUOUSLY SPENDING MAINT. FUNDS TO "BAND-AID" REPAIR THE ROAD WHEN A MEDIUM OR HEAVY REHAB MAY BE A BETTER COST EFFECTIVE SOLUTION. THIS RESEARCH DOES NOT ADDRESS THIS.

ACCORDING TO FIG 4, IN THEORY A 1 MILE LONG ROAD WITH HEAVY TRAFFIC COULD HAVE 9 SHATTERED SLABS, 14 FAILURES, & GREATER THEN 4% LONGITUDINAL CRACKS (OR LESS THAN 4% LONG. & GREATER THEN 10 FAILED JOINTS/CRACKS) & BE A CANDIDATE FOR A LIGHT REHAB WHICH WOULD BE FDR OR OVERLAY. IN REALITY THIS ROAD WOULD NOT BE GIVEN A LRHB BUT PROBABLY RECONSTRUCTED, SO WE BELIEVE THE SS & FL THRESHOLDS SHOULD BE LOWERED.

PLEASE ALSO LOOK AT THE LOCATIONS OF FL ≥ 25 & FL ≥ 30, AS LOCATIONS IN THE TREE DO NOT MAKE SENSE.

Authors' response to the last sentence above

Three different logical pathways converge at the test for LC≥5, which if negative requires additional tests for failures for some of (but not all) of those converging branches. Avoiding all possible redundancies requires several other pathways, complicating the flowchart and increasing the potential for coding errors. On the other hand, if a computer programmer fails to notice the redundancy and codes it anyway, the proper logical sequence is maintained.

RIDE SCORE DOES NOT EVEN FACTOR IN AS A CRITERION IN THE FLOW CHART UNTIL THE VERY END OF THE DECISION TREE. WE BELIEVE THAT RS SHOULD CARRY MORE WEIGHT AS EXPERIENCE DOES SHOW ESPECIALLY FOR JCP PAVEMENTS THAT IF THE RS IS LOW IT IS DUE TO THE HIGH PROBABILITY OF POOR LTE & A PM WILL NOT ADDRESS THIS BUT A FDR, DOWEL BAR RETROFIT AND/OR DIAMOND GRINDING MAY BE A BETTER ALTERNATIVE. TO EXPAND FURTHER, IT IS UNDERSTOOD THAT THE STRUCTURAL CONDITION OF A PAVEMENT IS CRITICAL TO THE LIFE OF A ROAD. HOWEVER, IT IS ALSO CRITICAL TO CONSIDER HOW A PAVEMENT RIDES, AS SMOOTHNESS IS A PRIMARY CONSIDERATION FOR ROAD USERS. IF RS DOES NOT CARRY MUCH WEIGHT, THEN IN THEORY, WE COULD HAVE ROADS WITH ACCEPTABLE DISTRESS SCORES BUT TERRIBLE RIDES WHICH WOULD DECREASE THE PUBLIC'S OPINION OF HOW WELL TXDOT IS SERVING THEM, THE SHAREHOLDERS. HOWEVER, WE DO REALIZE THAT FUNDING WILL LIMIT THE TYPE & AMOUNT OF WORK TO BE PERFORMED.

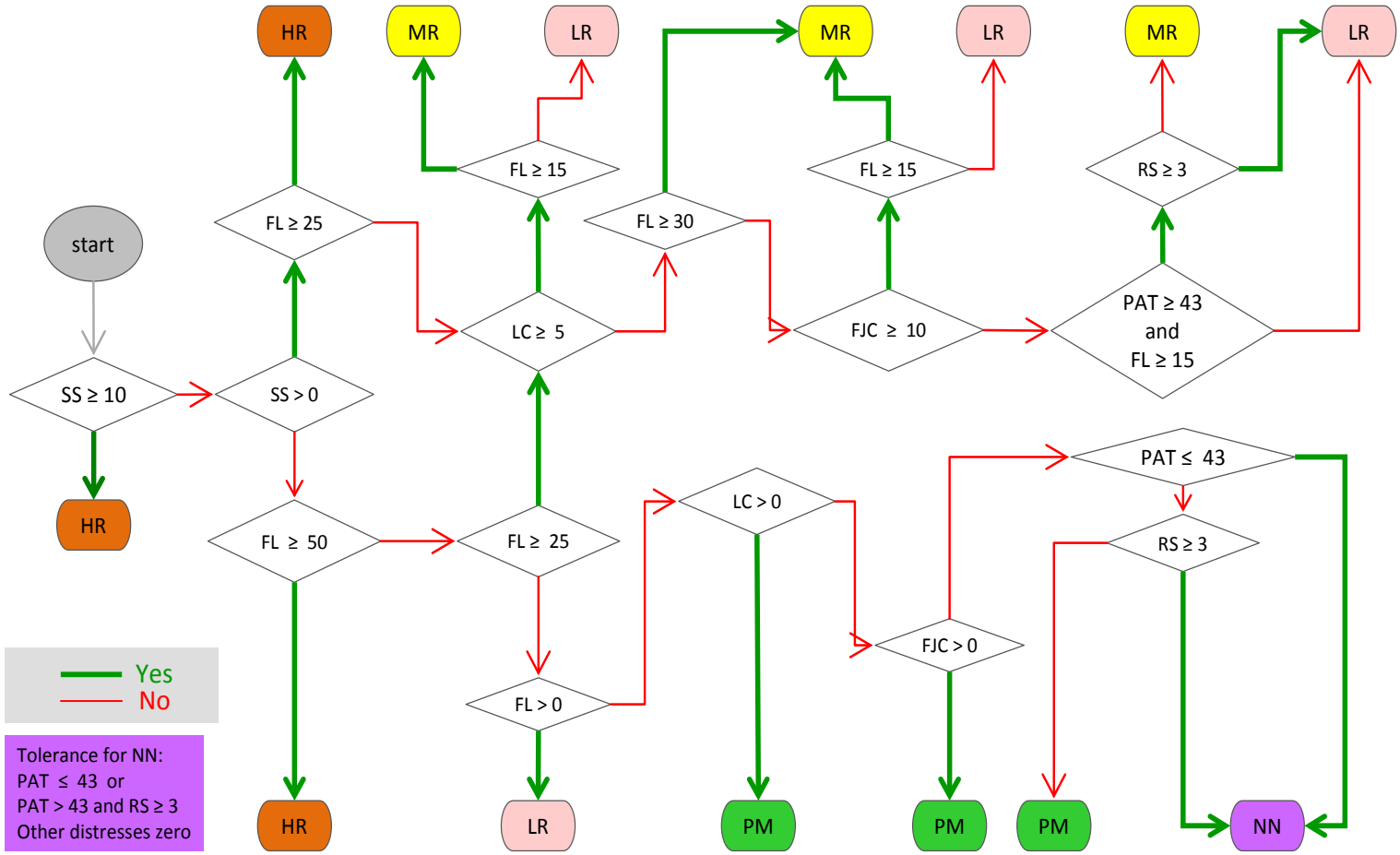

Figure Y1. Preliminary JCP Decision Tree, Wet Climatic Zones, High Traffic.

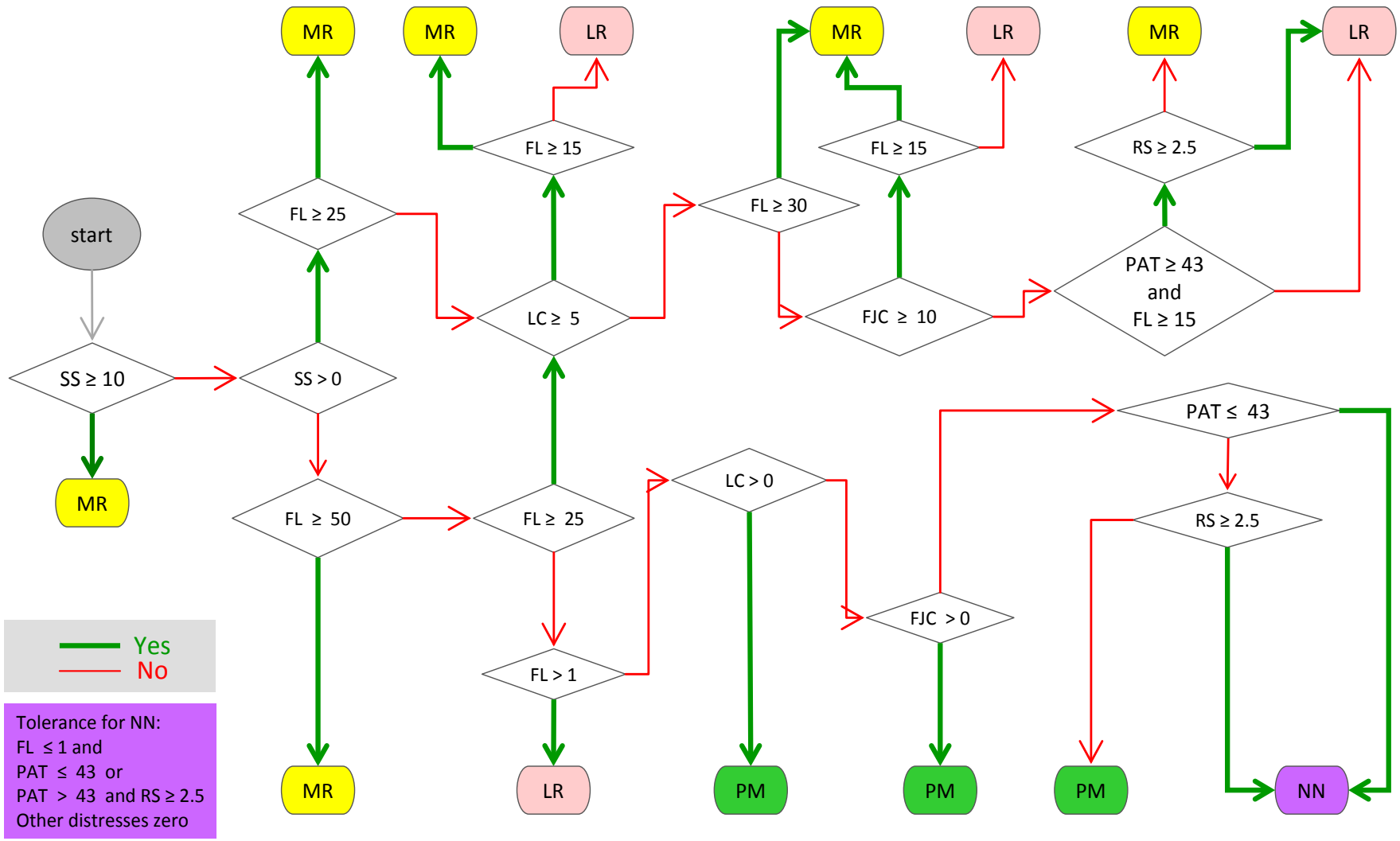

Figure Y2. Preliminary JCP Decision Tree, Wet Climatic Zones, Low Traffic.

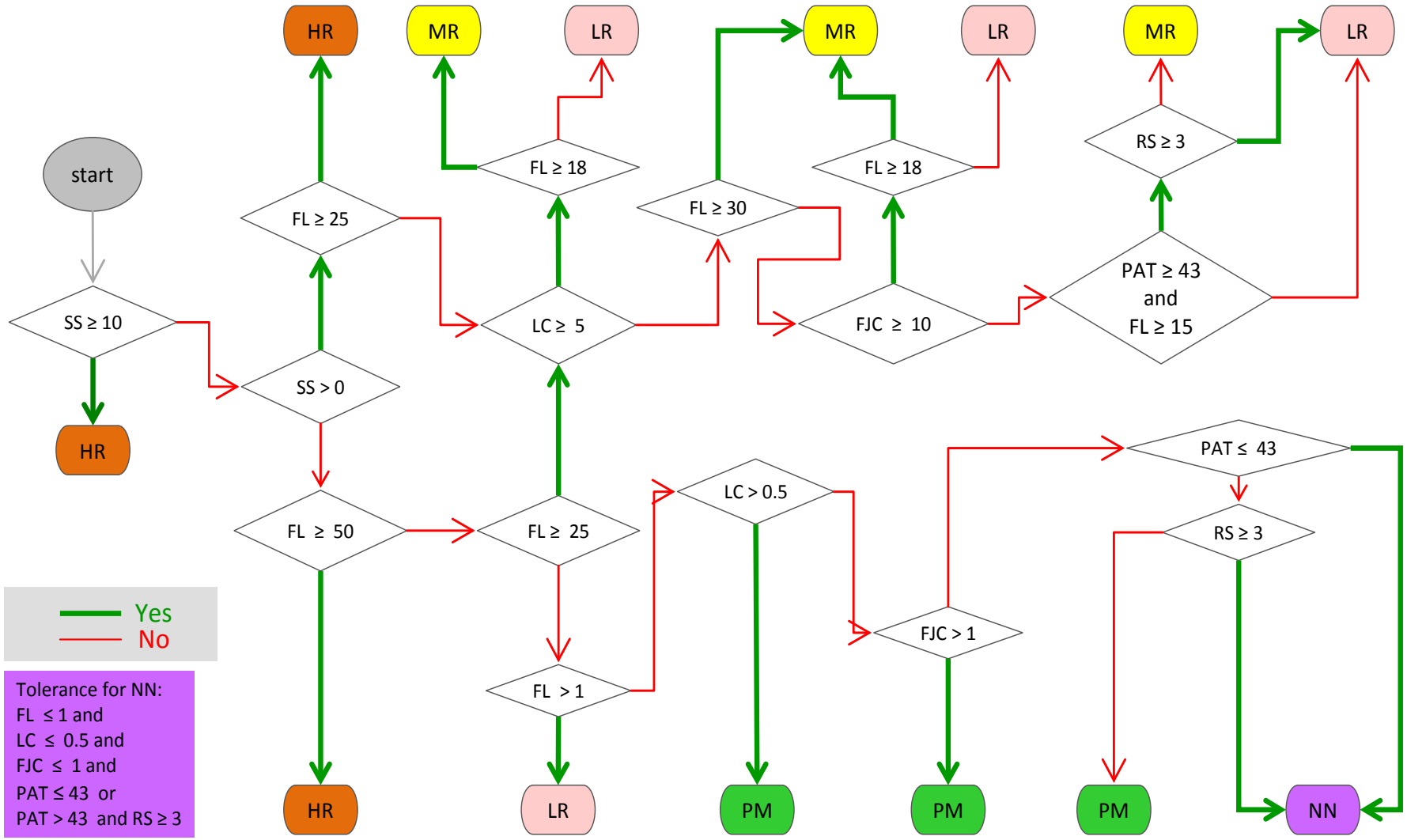

Figure Y3. Preliminary JCP Decision Tree, Dry Climatic Zones, High Traffic.

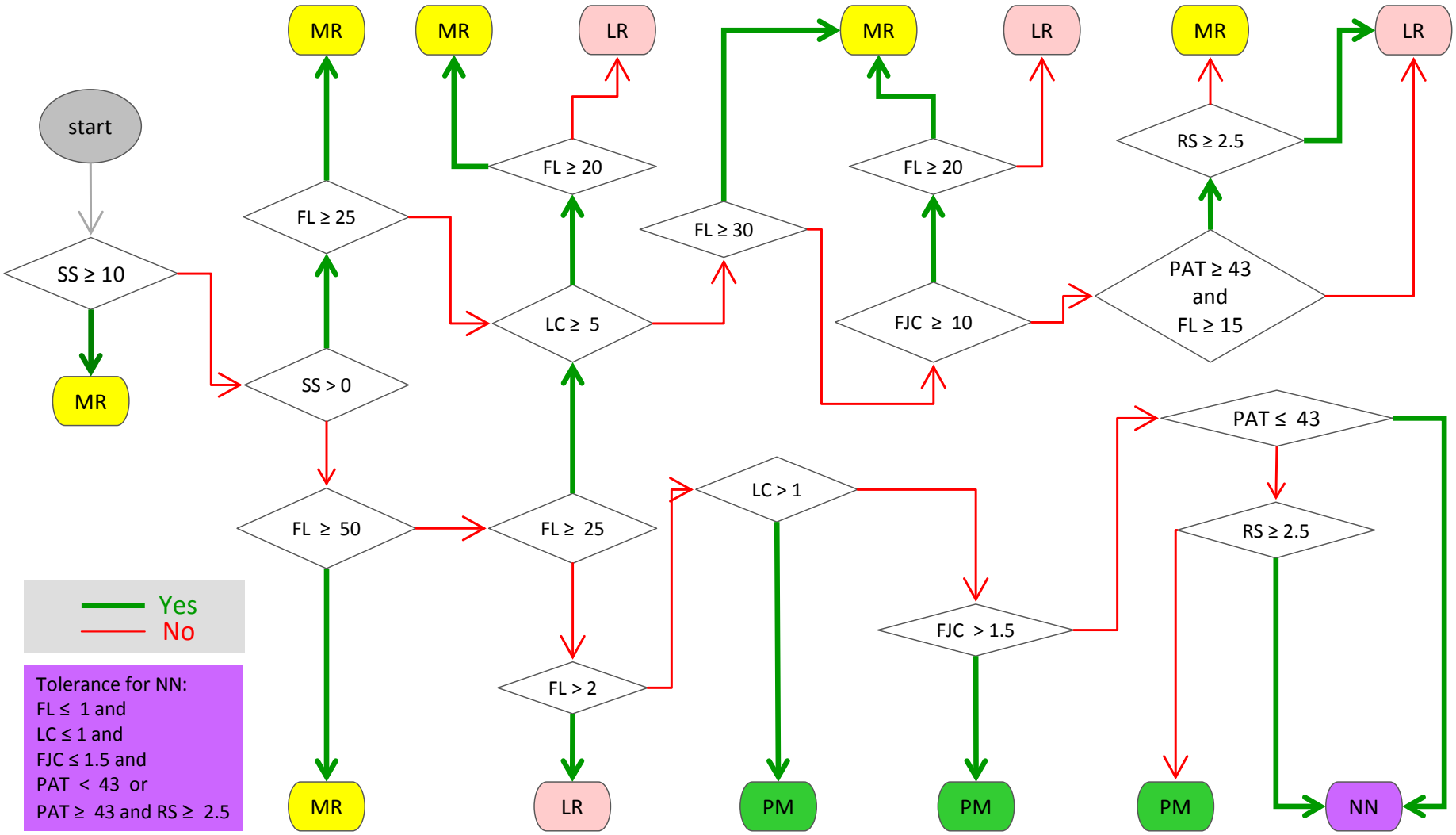

Figure Y4. Preliminary JCP Decision Tree, Dry Climatic Zones, High Traffic.