Stormwater Management Report

for

WHEATON FLOOD STUDY

Madison Street & Jefferson Avenue Areas

WMA Job # 44059

Prepared for:

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Narrative Summary

The following Flood Prone Area Study analyzes the causes and limits of flooding within two depressional areas in northwest Wheaton. The Madison Street Flood Prone Area is an upland depression centered between Ellis Avenue and Gary Avenue. The Jefferson Avenue Flood Prone Area is an upland depression centered between Wheaton Avenue and Main Street. These two areas have been combined into the same report since they share a common storm sewer outfall and therefore impact each other and are modeled together.

The purpose of this study is to provide information on existing flooding and provide conceptual remediation proposals along with corresponding estimates of cost pursuant to Wheaton City Council Strategic Goal 2C which has a target of protecting 100% of structures for a yet to be determined frequency rain event.

The results of the Madison Avenue Flood Study indicate that while two garages and several yards are subject to inundation, the low entry and top of foundation elevations of all existing homes in this area are above the 100-year flood elevation. However, when considering the 500-year flood, the residence at 526 W. Madison has a lowest opening that is 0.05' lower than the peak elevation and would therefore be in danger for the relatively short duration that the 500-year storm is in its peak flooding stage.

The results of the Jefferson Avenue Flood Study show that there are five homes that are directly impacted by the 100-year flooding in this area. This number increases to seven when considering the 500-year storm event. In addition, there is significant ponding within the Jefferson Avenue roadway and in the yards.

Study Methodology

The XPSWMM model was used to study these flood prone areas. XPSWMM is a stormwater hydrology and hydraulics modeling software that dynamically balances water movement throughout both storm sewers and detention ponding areas, allowing for accurate modeling of existing and proposed conditions for a wide range of flood events. This software also allows for the modeling of the ground surface (1D/2D integrated) to accurately model the overflow of the storm sewer systems and to dynamically account for localized ponding and re-entry into the storm sewer system within the model.

Hydrology

The ground surface information for this study started with the DuPage County GIS topography. This was then supplemented with detailed topographic survey data provided by Webster McGrath & Ahlberg, Ltd. (WMA) survey crews within the flood-prone areas. WMA survey crews also collected the storm sewer structure rim and pipe invert elevations along with pipe sizes throughout the study area and all the way down to the storm sewer outlet at Winfield Creek.

The tributary area (catchment) draining to each storm inlet was delineated using the DuPage GIS topography and WMA detailed topography. Runoff curve numbers (CN values) describing the relative imperviousness of the catchment areas were calculated using the SCS methodology. Times of Concentration (Tc) were then calculated for the larger catchments. The time of concentration represents the length of time that it takes for storm runoff to travel from the upstream ends of the catchment area

down to the low point of each catchment area. A generally accepted assumed Tc of 10 minutes was used for the smaller catchments where the catchment area was reasonably close to the storm inlet.

Hydraulics

Most of the existing storm sewer network within the study area down to the outlet at Winfield creek was imported into the XPSWMM model. In some areas, farther from the center of the problem areas, the storm sewer modeling was simplified to only show the main lines.

The downstream starting water elevation (tailwater) was obtained from the DuPage FIS flood profile (272P). The crown of the pipe + 1 foot (726.0) was used for the 1yr, 5yr, and 10yr storms since the pipe was submerged already at the time of the field survey. The downstream 10yr peak (730.5) was used as the starting elevation for the 25yr and 50yr storms. The downstream 50yr peak (731.5) was used as the starting elevation for the 100yr storms and the 100yr peak downstream elevation of 732.0 was used for the 500yr storms.

Rainfall

Rainfall depths and intensity patterns were taken from ISWS Bulletin 71. The flood prone area study includes an analysis of a wide range of synthetic storm types. These storms vary both in their duration and in the statistical probability of occurring in any year. Thus, a storm with a 1% probability of occurring in a year is referred to as a 100-year storm (likely to occur once in a hundred years). This study includes storm durations of 1hr, 2hr, 3hr, 6hr, 12hr and 24 hours. As shown in Bulletin 71, these different storm durations typically follow specific intensity patterns. The shorter duration storms, corresponding to a given storm frequency, are more intense, whereas the longer duration storms are less intense, but produce a larger overall volume of water. It should be noted that the shorter duration storms with their higher intensities typically yield the peak flooding results for areas with direct runoff or storm sewer drainage, whereas the longer duration storms typically yield the peak flooding results for areas with detention or slow draining outlets since the overall volume is higher.

Therefore, each study area has a "critical duration" which is the specific duration that yields the highest water elevations for that area.

Model Calibration

It is helpful to compare a model's results to real world storm events and resulting flooding, where such documentation exists, to verify the reliability of the digital model. In the case of this flood study, documentation has been collected and provided to the City of Wheaton by the owners of the property at 206 W Jefferson Avenue.

Their documentation included many pictures of the affected area, but most helpful for this study was a measurement from their garage floor to the top of the flooding residue on their garage door of 17" in depth. They also noted that this storm occurred on July 24, 2010. As shown in the detailed topographic survey included in this report, the garage floor at 206 W Jefferson Avenue has an elevation of 751.46. Therefore, the resulting measured high-water level for this storm was 752.9.

The City of Wheaton has provided their records of the rainfall measured at their four rain gauges throughout the City limits (see below). As shown, there is considerable variation of both rainfall intensity and duration throughout the gauges.

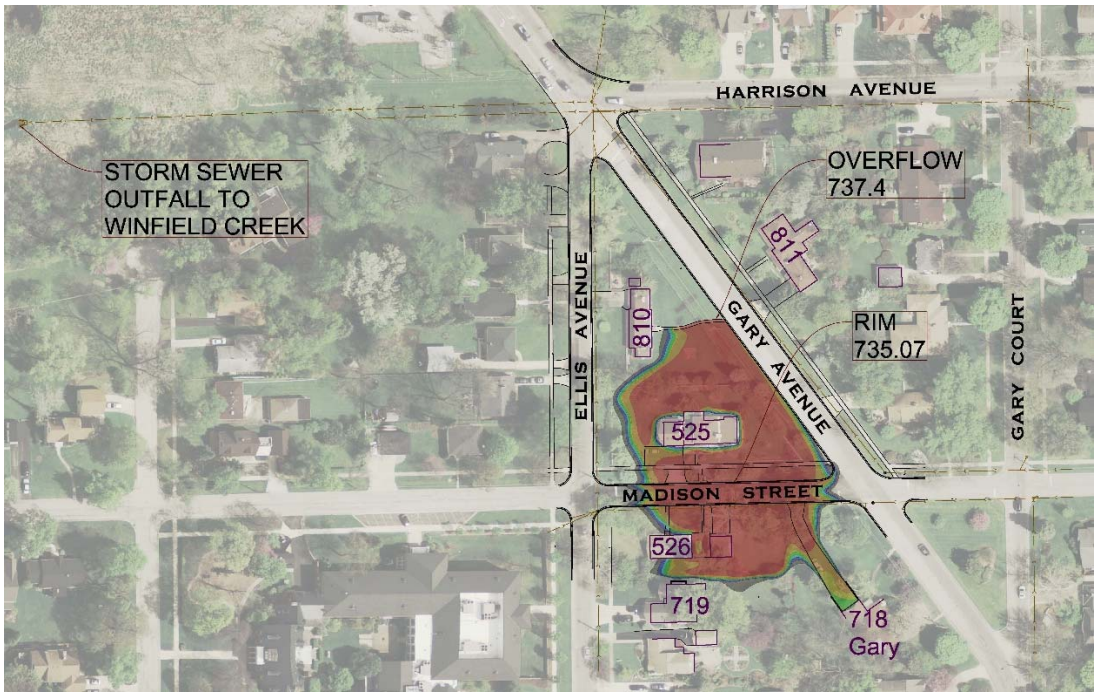
Blacksmith Rain Gauge: 4.2" over 8hr (~25yr)
Blockhouse Rain Gauge: 6.67" over 12hr (>100yr)
Countryside Rain Gauge: 5.94" over 10hr (~80yr)
Willow Rain Gauge: 6.96" over 12hr (>100yr)

We have modeled the Countryside Rain Gauge recorded values with a resulting peak elevation of 754.0 at this garage. This is substantially higher than the measured value noted. This means that the model used in this study is yielding conservative results. However, due to the considerable spatial variation of rainfall intensity throughout the City and also the lack of data on ground saturation levels before this specific storm, we believe that the model is providing reliable yet conservative results for the design storms in question.

Existing Conditions

As shown in the Catchment Areas Exhibit (X-3), included in this report, the tributary area affecting the two study areas can be broken down into three types of tributary impact. The first tributary area, shaded in red on Exhibit X-3, includes 54.8 acres and drains to or through the study area via storm sewer as well as the overland overflow when the storm sewer capacity is exceeded. The second tributary area, shaded in blue on Exhibit X-3, is tributary to the storm sewer system draining through the study areas, but the overland overflow drains away from this study area. The 59.6-acre area, shaded in green on Exhibit X-3, is tributary to storm sewers that drain away from the study areas but the overland overflow drains to the subject study areas. It should be noted, however, that when this green area was modeled, only one of the storm sewer lines surcharged high enough to overflow into the red tributary areas. Therefore, only a small portion of this green area contributes flow to the flooding experienced at the two subject study areas.

Madison Street Flood Prone Area



The low point on Madison Street in front of 525 W. Madison St. is 735.07 at the storm inlet. The overflow for this low area is 737.4 at the private walk to the front door of 810 Gary Avenue. The primary cause of flooding in this area is a lack of storm sewer capacity and the relatively large depth from the low point to the overland overflow elevation. Due to the relatively large direct tributary and the area tributary to the 15" storm sewer running along the south edge of Madison Street, the storm sewer capacity is exceeded in the peak of most of the calculated storms all the way down to the 1yr storms. The only storm that did not fill up this depression was the 1yr 24hr storm. It should be noted that these peaks are fairly short in duration once the runoff from the storm falls below the storm sewer capacity. The duration of flooding varies from about 2 hours in the 1yr storms to about 12 hours in the 100yr 24hr storm.

The flooding surrounds the house at 525 W Madison Street but the house itself is raised above the peak flooding elevation of 738.30 for the 500-year critical duration storm. The house at 526 W. Madison St is similarly protected up to the 100-year storm event. The 500-year event, however has a peak that is 0.05' higher than the lowest opening at 526 W. Madison. The floor of the detached garage at 526 W. Madison is 736.95 which is lower than even the 1-year critical duration storm. It is not clear how quickly the garages in the study area would take on water during these flash events, so these storage volumes have been removed from the XPSWMM model.

While farther away from the center of flooding, the attached garage floor elevation of 737.89 at 718 Gary Avenue is a bit lower than the 25yr critical duration storm peak elevation of 737.95. The rest of this house is set higher, so only the garage experiences flooding.

See Peak Flooding Limits Exhibit X-1 for a full-size drawing delineating the limits of inundation for the various storm frequencies in this area.

Table 1 – Madison Street & Gary Avenue Peak Flooding Results

Frequency	1yr	5yr	10yr	25yr	50yr	100yr	500yr
Peak Elevation (ft)	**737.47**	**737.78**	**737.84**	**737.95**	**738.04**	**738.15**	**738.30**
Peak Depth (ft)	2.4-ft	2.7-ft	2.8-ft	2.9-ft	3.0-ft	3.1-ft	3.2-ft
Critical Duration	2hr	2hr	2hr	1hr	1hr	1hr	1hr

Depth shown above is measured from storm inlet rim in front of 525 Madison Street.

Madison Street - Affected Properties

The following is a summary of the impact to each affected property within the 500-year peak ponding limits of the Madison Street Flood Prone Area. Please note that this analysis does not include ground water seepage into basements or higher possible flood depths due to clogging of the storm sewer inlets.

525 W Madison Street (P.I.N. 05-17-202-002): The lowest water entry elevation for this property is 738.83 which is higher than the 500-year peak flooding elevation of 738.30. There is a significant amount of flooding on this property, but the house itself is not directly compromised.

526 W. Madison Street (P.I.N. 05-17-207-001): The lowest water entry elevation for this property is a window sill at 738.25 which is above the 100-year peak flooding elevation of 738.15 but below the 500-year peak flooding elevation of 738.30. It should be noted that the detached garage has a floor elevation of 736.95 and will therefore be prone to flooding in the 1-year and greater peak flood events.

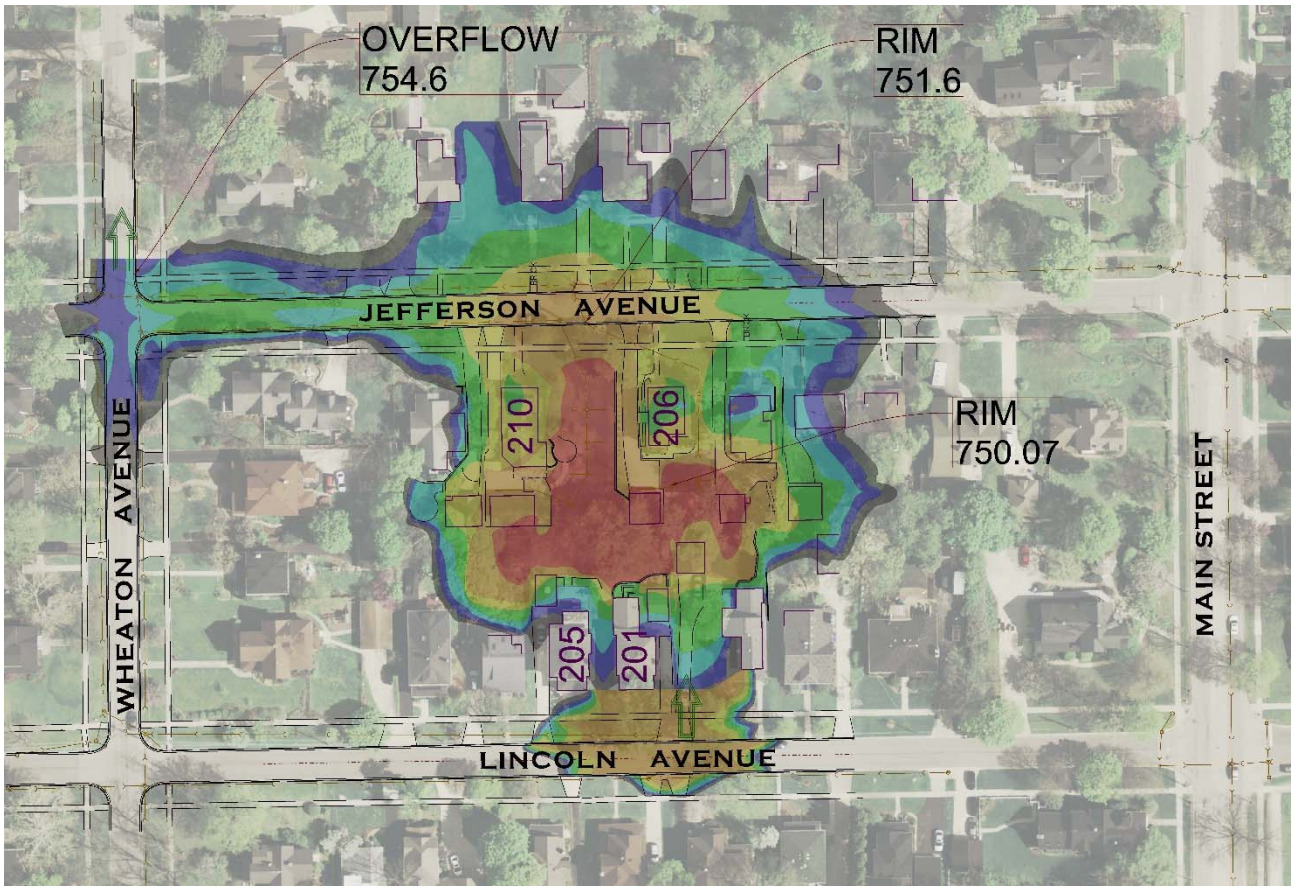
718 Gary Avenue (P.I.N. 05-17-207-011): The lowest water entry elevation for this property is the garage floor at 737.89 which is lower than the 25yr, 50yr and 100yr elevations. The habitable space, however, is much higher with a top of foundation elevation of 744.70. Therefore, the structure on this property is not considered to be affected.

810 Gary Avenue (P.I.N. 05-17-202-001): The lowest water entry elevation for this property is the top of foundation at 739.04. This is higher than the 500-yr peak flooding elevation of 738.30, therefore this house is not in direct danger from flooding. There is, however, ponding in the yards up to the overflow point which is the private front door walk to the street.

Table 4 – Madison Street & Gary Avenue Impacted Properties Summary

	Depth Above Lowest Opening to Habitable Space (ft)						
	1yr	**5yr**	**10yr**	**25yr**	**50yr**	**100yr**	**500yr**
525 W Madison	0	0	0	0	0	0	0
526 W Madison	0	0	0	0	0	0	**0.05**
718 Gary Ave	0	0	0	0	0	0	0
810 Gary Ave	0	0	0	0	0	0	0

Jefferson Avenue Flood Prone Area



The flooding of the Jefferson Avenue depression area is also caused by undersized storm sewer surcharging to a low area with no overland overflow until a flooding depth of over 4.5 feet is reached in the rear yards of 206 and 210 W Jefferson. Even the Jefferson Avenue roadway pavement experiences over 3-ft of ponding before overflow conditions. This is further exacerbated by another low point in Lincoln Avenue which overflows northerly over the public sidewalk down to the Jefferson Avenue rear yard depression area.

The maximum ponding depth in the rear yards varies from around 18" in the 1-year critical duration storm (751.47) up to 5.4 feet in the 500-year critical duration storm (755.50). This entire depression overflows near the intersection of Jefferson Avenue and Wheaton Avenue at an elevation of 754.6 in the street gutter.

Table 2 – Jefferson Avenue Peak Flooding Results

Frequency	**1yr**	**5yr**	**10yr**	**25yr**	**50yr**	**100yr**	**500yr**
Peak Elevation (ft)	**751.47**	**752.51**	**753.34**	**754.28**	**754.80**	**755.17**	**755.50**
Peak Depth (ft)	1.4-ft	2.4-ft	3.3-ft	4.2-ft	4.7-ft	5.1-ft	5.4-ft
Critical Duration	1hr	2hr	2hr	2hr	2hr	2hr	2hr

Depth shown above is measured from storm inlet rim in the rear yard of 206 W Jefferson Ave.

As shown in the Flood Limits Exhibit X-2, the ponding in Lincoln Avenue has been delineated and shows ponding depths up to about 1.35 feet (755.94) for the 500-year critical duration storm. The overflow elevation for this area is 755.3 at the public sidewalk across from the low point storm inlet which has a rim elevation of 754.6.

Table 3 – Lincoln Avenue Peak Flooding Results

Frequency	1yr	5yr	10yr	25yr	50yr	100yr	500yr
Peak Elevation (ft)	**751.95**	**755.64**	**755.75**	**755.82**	**755.86**	**755.90**	**755.94**
Peak Depth (ft)	0.0-ft	1.05-ft	1.16-ft	1.23-ft	1.27-ft	1.31-ft	1.35-ft
Critical Duration	1hr	1hr	1hr	1hr	1hr	1hr	1hr

Depth shown above is measured from storm inlet rim in front of 201 W Lincoln Ave.

See Peak Flooding Limits Exhibit X-2 for a full-size drawing delineating the limits of inundation for the various storm frequencies in this area.

Jefferson Avenue - Affected Properties

The following is a summary of the impact to each affected property within the 500-year peak ponding limits of the Jefferson Avenue Flood Prone Area. Please note that this analysis does not include ground water seepage into basements or higher possible flood depths due to clogging of the storm sewer inlets.

122 W Jefferson Ave (P.I.N. 05-16-111-009): The lowest water entry elevation for this property is a window sill at 755.63. This is higher than the 500-year peak flooding elevation of 755.50. The detached garage, however, has a floor elevation of 753.89 and is therefore at risk of flooding in the 25yr and greater events.

128 W Jefferson Ave (P.I.N. 05-16-111-008): The lowest water entry elevation for this property is a dropped top of foundation elevation of 753.15 in the rear of the house. This is lower than the critical duration peak flooding elevation for the 10yr and greater storm events. Raising this dropped rear foundation is likely to be the most cost-effective solution. Also, the detached garage floor elevation is 751.66 which is lower than the 5yr and greater storm events.

201 W Jefferson Ave (P.I.N. 05-16-106-015): The lowest water entry elevation for this property is the top of foundation at 756.01. This is higher than the 500-year peak flooding elevation. There will be ponding in the front yard and Jefferson Avenue pavement in front of this property, but the house itself is not in direct danger from the flooding.

205 W Jefferson Ave (P.I.N. 05-16-106-014): The lowest water entry elevation for this property is a window sill at 755.74. This is higher than the 500-year peak flooding elevation. There will be ponding in the front yard and Jefferson Avenue pavement in front of this property, but the house itself is not in direct danger from the flooding.

206 W Jefferson Ave (P.I.N. 05-16-111-007): The lowest water entry elevation for this property is a window sill at 754.62. This is lower than the critical duration peak flooding elevation for the 50yr and greater storm events. Also, the detached garage floor elevation is 751.46 which is slightly lower than the 1yr critical duration peak flooding elevation.

210 W Jefferson Ave (P.I.N. 05-16-111-006): The lowest water entry elevation for this property is a dropped top of foundation elevation of 753.25 in the rear of the house. This is lower than the critical duration peak flooding elevation for the 10yr and greater storm events. Raising this dropped rear foundation is likely be the most cost-effective solution. Also, the detached garage floor elevation is 752.04 which is lower than the 5yr and greater storm events.

211 W Jefferson Ave (P.I.N. 05-16-106-013): The lowest water entry elevation for this property is a window sill at 756.08. This is higher than the 500-year peak flooding elevation. There will be ponding in the front yard and Jefferson Avenue pavement in front of this property, but the house itself is not in direct danger from the flooding.

215 W Jefferson Ave (P.I.N. 05-16-106-012): The lowest water entry elevation for this property is a window sill at 755.45. This is higher than the 100-year peak flooding elevation but lower than the 500-year peak flood elevation. There will be ponding in the front yard and Jefferson Avenue pavement in front of this property, but the house itself is not in direct danger from the flooding until the 500-year event.

220 W Jefferson Ave (P.I.N. 05-16-111-005): The lowest water entry elevation for this property is a window sill at 756.34. This is higher than the 500-year peak flooding elevation. There will be ponding in the front and east side yard and Jefferson Avenue pavement in front of this property, but the house itself is not in direct danger from the flooding. The detached garage on this property, however, has a floor elevation of 753.19 which is lower than the 10-year and greater storm events.

Table 5 – Jefferson Avenue Impacted Properties Summary

	Depth Above Lowest Opening to Habitable Space (ft)						
	1yr	**5yr**	**10yr**	**25yr**	**50yr**	**100yr**	**500yr**
122 W Jefferson	0	0	0	0	0	0	0
128 W Jefferson	0	0	**0.19-ft**	**1.13-ft**	**1.65-ft**	**2.02-ft**	**2.35-ft**
201 W Jefferson	0	0	0	0	0	0	0
205 W Jefferson	0	0	0	0	0	0	0
206 W Jefferson	0	0	0	0	**0.18-ft**	**0.55-ft**	**0.88-ft**
210 W Jefferson	0	0	**0.09-ft**	**1.03-ft**	**1.55-ft**	**1.92-ft**	**2.25-ft**
211 W Jefferson	0	0	0	0	0	0	0
215 W Jefferson	0	0	0	0	0	0	**0.05-ft**
220 W Jefferson	0	0	0	0	0	0	0

Lincoln Avenue Overflow Area

127 W Lincoln Ave (P.I.N. 05-16-111-025): The lowest water entry elevation for this property is the top of foundation at 755.15. This is slightly lower than the 100-year (755.17) and 500-year (755.50) peak flooding elevation in the rear yard of this property. Also, the detached garage for this property has a floor elevation of 752.76 which is lower than the 10-year peak flood elevation. This driveway also appears to be the primary overflow path from Lincoln Avenue to the main rear yard flooding area.

201 W Lincoln Ave (P.I.N. 05-16-111-024): The lowest water entry elevation for this property is at the steps to a rear basement entry. The top step where water would overflow into this basement is at 753.75 which is lower than the 25yr critical duration peak flooding elevation. Raising the grade of this top step along with raising of the foundation is likely to be the most cost-effective solution. Also, the detached garage on this property has a floor elevation of 754.80 which is lower than the 100-year and 500-year critical duration peak flood elevation.

205 W Lincoln Ave (P.I.N. 05-16-111-015): The lowest water entry elevation for this property is the top of foundation at 755.19 which is slightly higher than the 100-year critical duration peak flood elevation of 755.17 but lower than the 500-year peak flood elevation of 755.50. The detached garage, however, has a floor elevation of 754.80 which is lower than the 100-year peak flooding elevation.

Table 6 – Lincoln Avenue Impacted Properties Summary

	Depth Above Lowest Opening to Habitable Space (ft)						
	1yr	**5yr**	**10yr**	**25yr**	**50yr**	**100yr**	**500yr**
127 W Lincoln	0	0	0	0	0	**0.02-ft**	**0.35-ft**
201 W Lincoln	0	0	0	**0.53-ft**	**1.05-ft**	**1.42-ft**	**1.75-ft**
205 W Lincoln	0	0	0	0	0	0	**0.31-ft**

Table 7 – Total Number of Affected Properties

	Number of Affected Properties per Storm Frequency						
	1yr	**5yr**	**10yr**	**25yr**	**50yr**	**100yr**	**500yr**
Madison & Gary Study Area	0	0	0	0	0	0	1
Jefferson & Lincoln Study Area	0	0	2	3	4	5	7

Proposed Conditions:

The following section provides conceptual remediation measures and corresponding estimates of cost to be studied and tabulated. Given that both study areas are fully developed residential areas without public open space nearby, there are very few feasible solutions that would not require full redevelopment of the impacted areas. Before describing the proposed alternatives, several unviable options were considered, as outlined below:

Unviable Alternates Considered

The first alternates studied were simple modifications to the storm sewer system in the vicinity of the subject flooding areas. The existing conditions model was modified to include check valves to try to isolate these low areas from storm sewer surcharging. However, since both of these areas include substantial direct tributary along with upstream storm sewer tributary area, the check valves had no impact to the resulting peak ponding elevations. The next tested scenario was to lower and increase the storm sewer pipe size from the Jefferson Avenue rear yard depression area to the storm mains along Jefferson Avenue. This proposed modification also had no impact on the resulting peak flooding elevations. Additional models were developed for a combination of pipe size increases and check valves but were also checked and showed no beneficial results.

Another alternative to consider would be to increase the main storm sewer pipe sizes from the problem areas all the way down to the outfall at Winfield creek or to add a secondary outlet pipe to increase capacity of the storm sewer system, thereby draining these problem areas more quickly to keep up with peak rainfall runoff. However, this option is not permissible due to the DuPage County Stormwater Ordinance requirements and Illinois Drainage Law, as this would negatively impact properties downstream of the current flooding areas by increasing peak discharge rates and removing upstream detention volume, thereby potentially exacerbating the flooding in other areas.

Madison Street Flood Prone Area

The only structure in danger in this area is the house at 526 W. Madison Street and only in the 500-year peak flood event. Given that the lowest opening is a basement window, this window could be raised or otherwise protected to eliminate this flood risk for a cost of ~$8,000.

However, the City may want to consider the impacts to public safety of having over 2-ft of ponding in the Madison Street pavement for even the 1-year event and up to 3-ft of ponding in the 100-year critical duration event. Unfortunately, as previously mentioned, there are no simple solutions to this issue. It would require either raising the whole area and installing underground detention, or a buy-out and removal of 525 and 526 W Madison in order to raise the street pavement and compensate with detention on the purchased property.

Given the proximity of this area to the storm sewer outfall near Winfield Creek, an alternate to providing detention on these lots would be to provide the compensatory volume at the outfall. However, this alternate would still involve raising the roadway pavement and surrounding area since the ponding depth is governed primarily by the overflow elevation.

Jefferson Avenue Flood Prone Area

Alternate 1: Raising of Foundation Walls

This alternate would involve raising the house foundations above the flood protection elevation. Several homes have foundations that are dropped in the rear of the houses. These foundations would be raised to match the higher tops of foundation in the front of the homes to better protect the homes from flooding. This alternate would also include flood-proofing of window wells for those homes not in need of foundation work. The estimated total cost for this option is $546,000. This assumes a cost of $100,000 for raising of the foundation in the rear to match the higher foundation for each house. This would eliminate the flood risk for all seven houses currently impacted in this area.

Alternate 2: Public Storm Sewer – Private Detention

It should be noted that the yards and detached garages in this area would still be at a considerably high risk of flood damage from even a 5-yr storm. For this reason, we have included a cost estimate of $30,100 for adding a lowered and larger diameter storm sewer from Jefferson Avenue to and along the rear property lines. As previously mentioned, this increased storm sewer would not directly lower the flooding elevations. However, it would allow a homeowner to raise portions of their property and install private underground detention by connecting to this new storm sewer.

Alternate 3: Regional Underground Detention

To eliminate the flooding in this area would require large underground detention vaults or pipes, along with raising of the Jefferson Avenue pavement and filling of the low areas to provide a more regional solution. Underground detention vaults are estimated to cost around $400,000 per acre-foot of volume. The total cost of this alternate would be approximately $2.6M, which is approximately equal to the 100-year buy-out cost of all the affected properties. There would be substantial benefits to this plan, however, over the buy-out option since it would eliminate the safety hazard of 3 feet of ponding in the Jefferson Avenue roadway pavement and more than 5 feet of ponding in the rear yards of some of the affected properties.

Alternate 4: Buy-Out

To provide a baseline comparison between separate study areas and show a baseline "worst case scenario", the final option considered was for the City to buy out all affected properties. The following home values were taken from the DuPage County Tax Assessor's 2017 "Fair Cash Value" appraisals. If the buyout were limited to the 100-year flood limits, then the total buyout cost for the five (5) affected properties is $2,560,200. The cost to demolish these 5 homes would add approximately $200,000 to the total cost of this option. The buyout is increased to $3,295,700 if it were extended to include the houses within the 500-year flood limits.

Table 8 – Summary of Costs for Alternative Remediation Measures

	Estimated Cost	# of Houses Affected	Cost per House
1: Extensive Flood-Proofing	$546,000	7	$78,000
2: Public Storm Sewer	$30,100 + private	7	$4,300 + private
3: Regional Underground Detention	$2,621,000	7	$374,430
4: Buy-Out	$3,295,700	7	$470,815

Final Recommendations

The most cost-effective means of unilaterally reaching the Wheaton City Council Strategic Goal 2C is flood-proofing of existing structures as needed (Alternate 1). Alternate 2 would be far simpler and would provide the infrastructure so that individual property owners could take it upon themselves to remove the flooding danger from their properties.

We would also recommend that serious consideration be given to the Regional Detention Option (Alternate 3) as this option would provide a more regional benefit of limiting the ponding in the Jefferson Avenue pavement to one (1) foot or less.

Affected Properties Summary - Madison Gary Ave Area

Address	Lowest Entry	TF	Critical Duration High Water Level (ft) 1yr	5yr	10yr	25yr	50yr	100yr	500yr	Property Value
525 W Madison St	738.83	738.83	737.47	737.78	737.84	737.95	738.04	738.15	738.30	$ 279,700
05-17-202-002										
526 W Madison St	738.25	739.91	737.47	737.78	737.84	737.95	738.04	738.15	738.30	$ 236,000
05-17-207-001										
718 Gary Ave	744.70	744.70	737.47	737.78	737.84	737.95	738.04	738.15	738.30	$ 262,100
05-17-207-011										
719 N Ellis Ave	738.42	739.44	737.47	737.78	737.84	737.95	738.04	738.15	738.30	$ 553,700
05-17-207-002										
810 Gary Ave	739.04	739.04	737.47	737.78	737.84	737.95	738.04	738.15	738.30	$ 265,200
05-17-202-001										

Total of Affected Houses = **$ 236,000**

Does not include garages in danger of flooding.

Note: Property values shown hereon are 2017 "Fair Cash Value" per DuPage County Tax Assessor

Lowest Entry = Lowest point of possible water entry to habitible space
TF = Top of Foundation

	Total Value of Affected Properties
1yr	$0
5yr	$0
10yr	$0
25yr	$0
50yr	$0
100yr	$0
500yr	$236,000

Affected Properties Summary - Jefferson Ave Area

Address	Lowest Entry	TF	Critical Duration High Water Level (ft)							Property Value
			1yr	5yr	10yr	25yr	50yr	100yr	500yr	
122 W Jefferson Av	755.63	755.88	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 221,900
05-16-111-009	Window									
128 W Jefferson Av	753.15	753.15	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 514,400
05-16-111-008	TF	Rear								
201 W Jefferson Av	756.01	756.01	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 377,600
05-16-106-015	TF									
205 W Jefferson Av	755.74	755.88	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 519,900
05-16-106-014	Window									
206 W Jefferson Av	754.62	756.67	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 386,900
05-16-111-007	Window									
210 W Jefferson Av	753.25	753.25	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 882,500
05-16-111-006	TF	Rear								
211 W Jefferson Av	756.08	756.68	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 685,100
05-16-106-013	Window	Rear								
215 W Jefferson Av	755.45	756.84	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 343,800
05-16-106-012	Window									
220 W Jefferson Av	756.34	758.87	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 673,700
05-16-111-005	Window									
127 W Lincoln Av	755.15	755.15	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 401,700
05-16-111-025	TF	Rear								
201 W Lincoln Av	753.75	754.44	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 374,700
05-16-111-024	Step Entry	Rear								
205 W Lincoln Av	755.19	755.19	751.47	752.51	753.34	754.28	754.80	755.17	755.50	$ 391,700
05-16-111-015	TF	Rear								

Total of Affected Houses = **$ 3,295,700**

Does not include properties with detached garages in danger of flooding.

Note: Property values shown hereon are 2017 "Fair Cash Value" per DuPage County Tax Assessor
Lowest Entry = Lowest point of possible water entry to habitible space
TF = Top of Foundation

	Total Value of Affected Properties
1yr	$0
5yr	$0
10yr	$1,396,900
25yr	$1,771,600
50yr	$2,158,500
100yr	$2,560,200
500yr	$3,295,700

ENGINEER'S ESTIMATE OF PROBABLE COSTS Date: 10/17/2018

Jefferson Avenue Area

ITEM DESCRIPTION	QTY	UNIT	UNIT COST	ITEM COST
Alternate 1: Raising Foundations & Window Waterproofing				
Raise foundation as needed	5	EA	$ 100,000	$ 500,000
Window/window well waterproofing	2	EA	$ 8,000	$ 16,000
Raise Door Entry (206 W Jefferson)	1	EA	$ 25,000	$ 25,000
Raise Basement Access Steps (201 W Lincoln)	1	EA	$ 5,000	$ 5,000
				$ 546,000
Alternate 2: Public Storm Sewer - Private Detention				
15" RCP w/bedding & backfill & restoration	430	LS	$ 70	$ 30,100
				$ 30,100
Alternate 3: Regional Underground Detention				
Underground detention vaults or pipes	4.0	ac-ft	$ 400,000	$ 1,600,000
Raise Jefferson Avenue roadway pavement	1	LS	$ 50,000	$ 50,000
Raise ground and restore landscaping	1	LS	$ 25,000	$ 25,000
Reconstruct Driveways & Garages	8	EA	$ 50,000	$ 400,000
Raise foundation drops and window wells as needed	1	LS	$ 546,000	$ 546,000
				$ 2,621,000
Alternate 4: Buyout				
Buyout houses within 10-year flood limits	1	LS		$ 1,396,900
Buyout houses within 25-year flood limits	1	LS		$ 1,771,600
Buyout houses within 50-year flood limits	1	LS		$ 2,158,500
Buyout houses within 100-year flood limits	1	LS		$ 2,560,200
Buyout houses within 500-year flood limits	1	LS		$ 3,295,700

CURVE NUMBER CALCULATIONS

Conversion from CN to Percent Impervious used in XPSWMM:

$CN = 98x + 74(1 - x)$

$$x = \frac{CN - 74}{24}$$

Catchment 0

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.53	83	44
Roadway R.O.W.	C	0.35	92	33
Total		**0.88**	**87**	
		Percent Impervious =	**52.6%**	

Catchment 1

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	4.56	83	378
Roadway R.O.W.	C	2.33	92	214
Total		**6.88**	**86**	
		Percent Impervious =	**50.2%**	

Catchment 2

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.11	83	9
Roadway R.O.W.	C	0.25	92	23
Total		**0.36**	**89**	
		Percent Impervious =	**63.7%**	

Catchment 3

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.89	83	156
Roadway R.O.W.	C	0.42	92	39
Total		**2.31**	**85**	
		Percent Impervious =	**44.4%**	

Catchment 4

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	2.01	83	167
Roadway R.O.W.	C	1.25	92	115
Total		**3.27**	**86**	
		Percent Impervious =	**51.9%**	

CURVE NUMBER CALCULATIONS

Catchment 5

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	5.15	83	428
Roadway R.O.W.	C	1.51	92	139
Total		**6.66**	**85**	
		Percent Impervious =	**46.0%**	

Catchment 6

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.11	83	9
Roadway R.O.W.	C	0.47	92	43
Total		**0.58**	**90**	
		Percent Impervious =	**67.8%**	

Catchment 7

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.49	83	40
Roadway R.O.W.	C	0.56	92	52
Total		**1.05**	**88**	
		Percent Impervious =	**57.6%**	

Catchment 8

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	3.09	83	256
Roadway R.O.W.	C	0.50	92	46
Total		**3.59**	**84**	
		Percent Impervious =	**42.7%**	

Catchment 9

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.62	83	51
Roadway R.O.W.	C	0.46	92	42
Total		**1.08**	**87**	
		Percent Impervious =	**53.5%**	

Catchment 10

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.00	83	0
Roadway R.O.W.	C	0.21	92	19
Total		**0.21**	**92**	
		Percent Impervious =	**75.0%**	

CURVE NUMBER CALCULATIONS

Catchment 11

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.48	83	40
Roadway R.O.W.	C	0.46	92	42
Total		**0.93**	**87**	
		Percent Impervious =	**55.9%**	

Catchment 12

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.44	83	37
Roadway R.O.W.	C	0.39	92	36
Total		**0.83**	**87**	
		Percent Impervious =	**55.2%**	

Catchment 13

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.21	83	17
Roadway R.O.W.	C	0.24	92	22
Total		**0.45**	**88**	
		Percent Impervious =	**57.9%**	

Catchment 14

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.32	83	26
Roadway R.O.W.	C	0.29	92	27
Total		**0.61**	**87**	
		Percent Impervious =	**55.5%**	

Catchment 16

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	29.30	83	2,432
Roadway R.O.W.	C	8.63	92	794
Total		**37.94**	**85**	
		Percent Impervious =	**46.0%**	

Catchment 17

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	7.26	83	602
Roadway R.O.W.	C	2.80	92	258
Total		**10.05**	**86**	
		Percent Impervious =	**47.9%**	

CURVE NUMBER CALCULATIONS

Catchment 19

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	2.39	83	198
Roadway R.O.W.	C	1.05	92	96
Total		**3.44**	**86**	
		Percent Impervious =	**48.9%**	

Catchment 20

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	2.48	83	206
Roadway R.O.W.	C	1.15	92	106
Total		**3.63**	**86**	
		Percent Impervious =	**49.4%**	

Catchment 21

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	3.06	83	254
Roadway R.O.W.	C	1.88	92	173
Total		**4.94**	**86**	
		Percent Impervious =	**51.8%**	

Catchment 22

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	14.86	83	1,233
Roadway R.O.W.	C	4.27	92	393
Total		**19.13**	**85**	
		Percent Impervious =	**45.9%**	

Catchment 23

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.23	83	19
Roadway R.O.W.	C	0.31	92	28
Total		**0.54**	**88**	
		Percent Impervious =	**58.9%**	

Catchment 24

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.58	83	48
Roadway R.O.W.	C	0.48	92	44
Total		**1.06**	**87**	
		Percent Impervious =	**54.5%**	

CURVE NUMBER CALCULATIONS

Catchment 25

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.06	83	88
Roadway R.O.W.	C	0.35	92	32
Total		**1.41**	**85**	
		Percent Impervious =	**46.9%**	

Catchment 26

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	2.35	83	195
Roadway R.O.W.	C	0.76	92	70
Total		**3.11**	**85**	
		Percent Impervious =	**46.7%**	

Catchment 27

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	3.17	83	263
Roadway R.O.W.	C	0.78	92	72
Total		**3.95**	**85**	
		Percent Impervious =	**44.9%**	

Catchment 28

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.13	83	94
Roadway R.O.W.	C	0.67	92	62
Total		**1.81**	**86**	
		Percent Impervious =	**51.5%**	

Catchment 29

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.55	83	129
Roadway R.O.W.	C	0.87	92	80
Total		**2.42**	**86**	
		Percent Impervious =	**50.9%**	

Catchment 30

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.24	83	20
Roadway R.O.W.	C	0.18	92	17
Total		**0.42**	**87**	
		Percent Impervious =	**53.7%**	

CURVE NUMBER CALCULATIONS

Catchment 31

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	2.18	83	181
Roadway R.O.W.	C	1.09	92	100
Total		**3.26**	**86**	
		Percent Impervious =	**50.0%**	

Catchment 32

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.52	83	126
Roadway R.O.W.	C	0.63	92	58
Total		**2.14**	**86**	
		Percent Impervious =	**48.5%**	

Catchment 33

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.38	83	115
Roadway R.O.W.	C	1.22	92	113
Total		**2.61**	**87**	
		Percent Impervious =	**55.1%**	

Catchment 34

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.80	83	66
Roadway R.O.W.	C	0.62	92	57
Total		**1.42**	**87**	
		Percent Impervious =	**53.9%**	

Catchment 35

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.69	83	57
Roadway R.O.W.	C	0.32	92	29
Total		**1.00**	**86**	
		Percent Impervious =	**49.3%**	

Catchment 36

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.17	83	14
Roadway R.O.W.	C	0.25	92	23
Total		**0.42**	**88**	
		Percent Impervious =	**59.5%**	

CURVE NUMBER CALCULATIONS

Catchment 37

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	2.09	83	173
Roadway R.O.W.	C	0.56	92	51
Total		**2.65**	**85**	
		Percent Impervious =	**45.4%**	

Catchment 38

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.22	83	18
Roadway R.O.W.	C	0.48	92	44
Total		**0.71**	**89**	
		Percent Impervious =	**63.2%**	

Catchment 39

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.97	83	163
Roadway R.O.W.	C	0.84	92	78
Total		**2.81**	**86**	
		Percent Impervious =	**48.8%**	

Catchment 40

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.94	83	161
Roadway R.O.W.	C	0.93	92	86
Total		**2.87**	**86**	
		Percent Impervious =	**49.7%**	

Catchment 41

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	4.70	83	390
Roadway R.O.W.	C	1.42	92	130
Total		**6.12**	**85**	
		Percent Impervious =	**46.2%**	

Catchment 42

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	2.65	83	220
Roadway R.O.W.	C	0.43	92	40
Total		**3.09**	**84**	
		Percent Impervious =	**42.8%**	

CURVE NUMBER CALCULATIONS

Catchment 43

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.15	83	12
Roadway R.O.W.	C	0.12	92	11
Total		**0.26**	**87**	
		Percent Impervious =	**54.1%**	

Catchment 44

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.48	83	40
Roadway R.O.W.	C	0.35	92	33
Total		**0.83**	**87**	
		Percent Impervious =	**53.4%**	

Catchment 45

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.39	83	33
Roadway R.O.W.	C	0.31	92	28
Total		**0.70**	**87**	
		Percent Impervious =	**53.9%**	

Catchment 46

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.55	83	128
Roadway R.O.W.	C	0.00	92	0
Total		**1.55**	**83**	
		Percent Impervious =	**37.5%**	

Catchment 47

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.11	83	92
Roadway R.O.W.	C	0.00	92	0
Total		**1.11**	**83**	
		Percent Impervious =	**37.5%**	

Catchment 48

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.69	83	58
Roadway R.O.W.	C	0.50	92	46
Total		**1.19**	**87**	
		Percent Impervious =	**53.1%**	

CURVE NUMBER CALCULATIONS

Catchment 49

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.21	83	18
Roadway R.O.W.	C	0.13	92	12
Total		**0.34**	**86**	
		Percent Impervious =	**51.4%**	

Catchment 50

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.41	83	34
Roadway R.O.W.	C	0.23	92	21
Total		**0.64**	**86**	
		Percent Impervious =	**50.8%**	

Catchment 51

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.87	83	155
Roadway R.O.W.	C	0.51	92	47
Total		**2.38**	**85**	
		Percent Impervious =	**45.6%**	

Catchment 52

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	1.56	83	130
Roadway R.O.W.	C	0.17	92	15
Total		**1.73**	**84**	
		Percent Impervious =	**41.1%**	

Catchment 53

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.18	83	15
Roadway R.O.W.	C	0.20	92	19
Total		**0.38**	**88**	
		Percent Impervious =	**57.5%**	

Catchment 54

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.22	83	18
Roadway R.O.W.	C	0.21	92	20
Total		**0.43**	**87**	
		Percent Impervious =	**56.2%**	

CURVE NUMBER CALCULATIONS

Catchment 55

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.02	83	2
Roadway R.O.W.	C	0.07	92	6
Total		**0.09**	**90**	
		Percent Impervious =	**65.9%**	

Catchment 56

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	3.15	83	262
Roadway R.O.W.	C	1.81	92	166
Total		**4.96**	**86**	
		Percent Impervious =	**51.2%**	

Catchment 57

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.67	83	55
Roadway R.O.W.	C	1.18	92	108
Total		**1.84**	**89**	
		Percent Impervious =	**61.4%**	

Catchment 58

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	0.32	83	26
Roadway R.O.W.	C	0.31	92	28
Total		**0.62**	**87**	
		Percent Impervious =	**56.0%**	

Catchment 59

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	4.00	83	332
Roadway R.O.W.	C	1.51	92	138
Total		**5.51**	**85**	
		Percent Impervious =	**47.7%**	

Catchment 60

Area Description	Soil Group	Area (acre)	CN	A x CN
Residential 1/4 acre lots	C	26.84	83	2,228
Roadway R.O.W.	C	7.86	92	723
Total		**34.70**	**85**	
		Percent Impervious =	**46.0%**	

TIME OF CONCENTRATION CALCULATIONS

					Catch 19	Catch 20		
SHEET FLOW								
	Surface Description				Grass	Grass		
	Manning's Coeff., n				0.24	0.24		
	High Elev.	ft			772.0	772.0		
Mannings Kinematic	Low Elev.	ft			771.3	771.3		
Solution:	Flow Length, L	ft			100	100		
$T = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} S^{0.4}}$	2-yr, 24-hr Rainfall, P_2	in			3.12	3.12		
	Land Slope, S	ft/ft			0.007	0.007		
	Time, T	hr			**0.367**	**0.367**		
SHALLOW CONCENTRATED FLOW								
	Surface Description				unpaved	unpaved		
$V = C_{sf}\sqrt{S}$	C_{SF}				16.13	16.13		
	High Elev.	ft			771.3	771.3		
C_{sf} = 16.1345 (unpaved)	Low Elev.	ft			768.0	768.0		
C_{sf} = 20.3282 (paved)	Flow Length, L	ft			350	350		
	Slope, S	ft/ft			0.009	0.009		
$T = \frac{L}{V} * \frac{1hr}{3600s}$	Velocity, V	fps			1.57	1.57		
	Time, T	hr			**0.062**	**0.062**		
OPEN CHANNEL FLOW								
	High Elev.	ft						
	Low Elev.	ft						
$R = \frac{A}{P_w}$	Flow Length, L	ft						
	X-sec. Flow Area, A	ft^2						
	Wetted Perimeter, P_w	ft						
Mannings Equation:	Hydraulic Radius, R	ft						
	Channel Slope, S	ft/ft						
$v = \left(\frac{1.49}{n}\right) R^{2/3}\sqrt{S}$	Manning's Coeff., n							
	Velocity, V	fps						
	Time, T	hr						
TOTAL	Sheet Flow	hr			0.367	0.367		
	Shall. Conc. Flow	hr			0.062	0.062		
	Channel Flow	hr						
	TIME OF CONC. (Tc)	hr			**0.43**	**0.43**		

NOTE: The above calculations are based on TR55 Methods as described in:
Soil Conservation Service, Urban Hydrology for Small Watersheds, Technical Release 55, June 1986.

JEFFERSON AVENUE DEPRESSIONAL AREA VOLUME CALCULATIONS

Conic Formula: $$V = \frac{1}{3}\left(A_1 + A_2 + \sqrt{A_1 * A_2}\right)(H_2 - H_1)$$

Elevation H (ft)	Existing Area A (ft^2)	Existing Area A (acre)	Incremental Volume V (ac-ft)	Existing Volume V (ac-ft)	
750.07	10	0.000		**0.000**	
			0.058		
751.0	7825	0.180		**0.058**	
			0.301		
752.0	19241	0.442		**0.359**	
			0.612		
753.0	34877	0.801		**0.971**	
			1.007		
754.0	53515	1.229		**1.978**	
			1.664		
755.0	93257	2.141		**3.642**	
			0.377		
755.17	100000	2.296		**4.019**	100yr HWL

Note: Areas shown hereon are based on detailed topography collected by WMA and do not include the volume that would be flooded into the houses or garages.

Bulletin 71 - Rainfall Table - DuPage County

Precipitation Depth Duration (inches)										
Duration (hours)	Recurrence Interval (years)									
	0.5	1	2	5	10	25	50	100		500
240	3.3	4.12	4.95	6.04	6.89	8.18	9.38	11.14		
120	2.6	3.25	3.93	4.91	5.7	6.93	8.04	9.96		
72	2.34	2.93	3.55	4.44	5.18	6.32	7.41	8.78		
48	2.18	2.7	3.3	4.09	4.81	5.88	6.84	8.16		
24	2.03	2.51	3.04	3.8	4.47	5.51	6.46	7.58		11.01
18	1.86	2.3	2.79	3.5	4.11	5.06	5.95	6.97		
12	1.77	2.18	2.64	3.31	3.89	4.79	5.62	6.59		9.58
6	1.52	1.88	2.28	2.85	3.35	4.13	4.85	5.68		
3	1.3	1.6	1.94	2.43	2.86	3.53	4.14	4.85		
2	1.2	1.48	1.79	2.24	2.64	3.25	3.82	4.47		6.38
1	0.96	1.18	1.43	1.79	2.1	2.59	3.04	3.56		
0.5	0.75	0.93	1.12	1.41	1.65	2.04	2.39	2.8		
0.25	0.55	0.68	0.82	1.03	1.21	1.49	1.75	2.05		
0.17	0.45	0.55	0.67	0.84	0.98	1.21	1.42	1.67		
0.08	0.24	0.3	0.36	0.46	0.54	0.66	0.78	0.91		

Source: Illinois State Water Survey, Bulletin 71, Table 1, Section 02 - Northeast

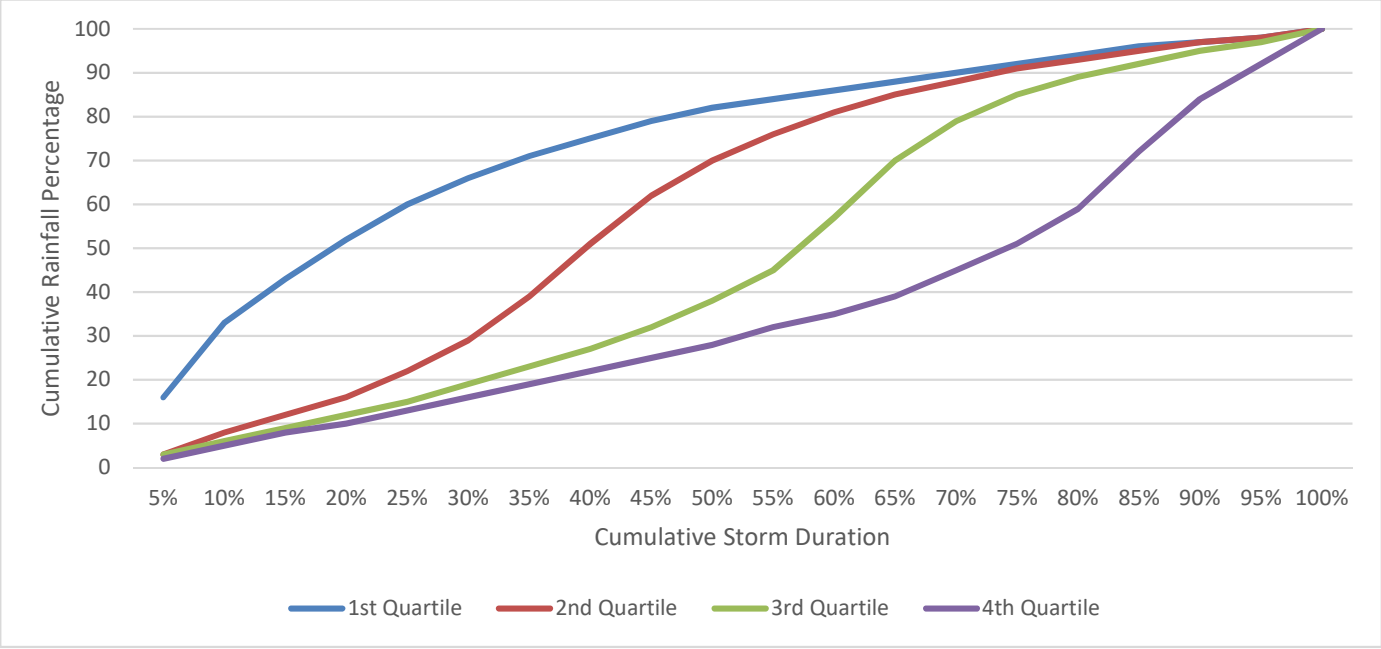
Note: 500yr values shown above are not provided within Bulletin 71. Bulletin 71 expressly warns about such extrapolations. However, in order to provide a consistent set of rainfall events with previous reports, these 500yr rainfall values are included for reference.

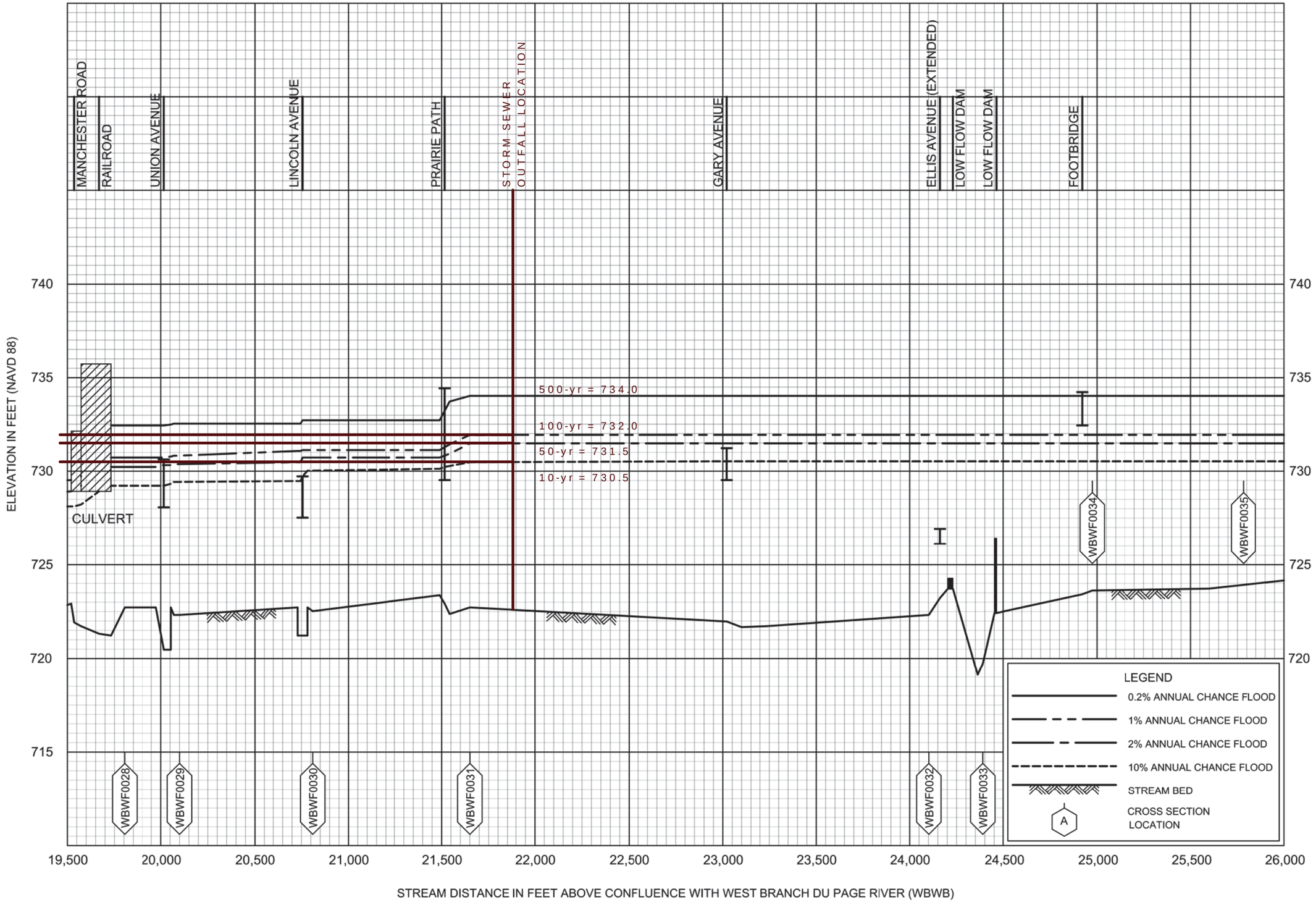
Bulletin 71 - Huff Rainfall Distribution Summary

Source: Illinois State Water Survey, Bulletin 71, Table 11

Cumulative Storm Time (%)	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
	Cumulative Storm Rainfall Percentage			
5%	16	3	3	2
10%	33	8	6	5
15%	43	12	9	8
20%	52	16	12	10
25%	60	22	15	13
30%	66	29	19	16
35%	71	39	23	19
40%	75	51	27	22
45%	79	62	32	25
50%	82	70	38	28
55%	84	76	45	32
60%	86	81	57	35
65%	88	85	70	39
70%	90	88	79	45
75%	92	91	85	51
80%	94	93	89	59
85%	96	95	92	72
90%	97	97	95	84
95%	98	98	97	92
100%	100	100	100	100

	Applicable Durations
1Q:	0 - 6hr
2Q:	6.1 - 12hr
3Q:	12.1 - 24hr
4Q:	> 24hr





FLOOD PROFILES

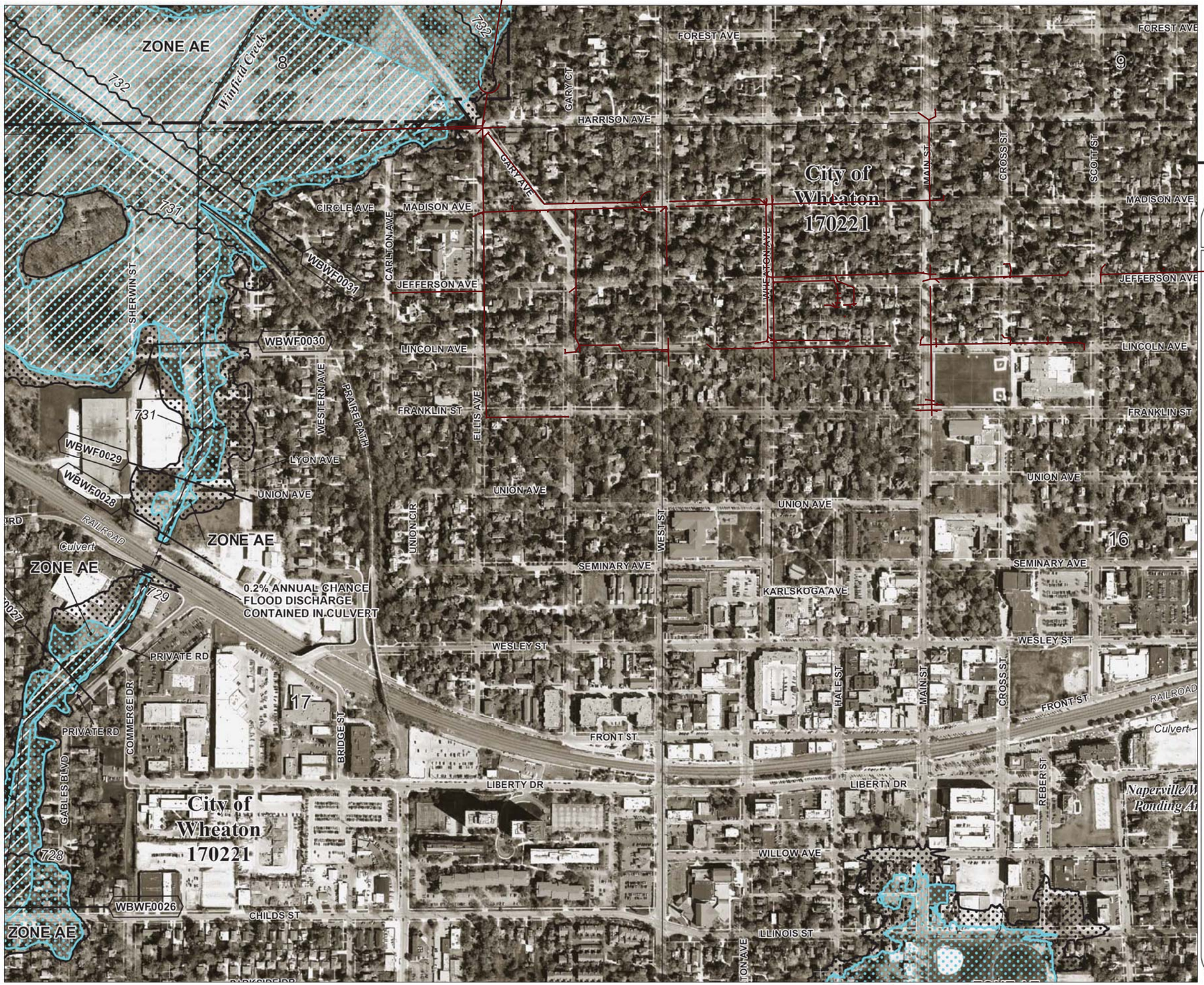
WINFIELD CREEK (WBWF)

FEDERAL EMERGENCY MANAGEMENT AGENCY

DU PAGE COUNTY, IL

AND INCORPORATED AREAS

272P



MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0151J

FIRM

FLOOD INSURANCE RATE MAP

DU PAGE COUNTY, ILLINOIS

AND INCORPORATED AREAS

PANEL 151 OF 287

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DU PAGE COUNTY	170197	0151	J
WHEATON, CITY OF	170221	0151	J

REVISED PRELIMINARY 6/1/2017

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
17043C0151J

MAP REVISED
to be determined

Federal Emergency Management Agency

Flood Elevation Results Table - Existing

525 Madison Street (Node 12) Rim = **735.07**

Return Period	1hr	2hr	3hr	6hr	12hr	24hr	Max Depth
1yr	737.39	**737.47**	737.30	736.80	736.25	734.25	2.40
5yr	737.77	**737.78**	737.75	737.70	737.59	737.03	2.71
10yr	737.84	**737.84**	737.80	737.74	737.70	737.56	2.77
25yr	**737.95**	737.92	737.87	737.79	737.74	737.68	2.88
50yr	**738.04**	737.99	737.92	737.85	737.78	737.72	2.97
100yr	**738.15**	738.07	737.99	737.92	737.81	737.75	3.08
500yr		**738.30**			737.89	737.81	3.23

206 Jefferson Avenue (Node 49) Rim = **750.07**

Return Period	1hr	2hr	3hr	6hr	12hr	24hr	Max Depth
1yr	**751.47**	751.42	751.06	750.94	750.86	750.77	1.40
5yr	752.48	**752.51**	752.13	751.48	751.07	750.91	2.44
10yr	753.21	**753.34**	753.03	752.18	751.46	750.95	3.27
25yr	754.06	**754.28**	754.11	753.45	752.21	751.40	4.21
50yr	754.61	**754.80**	754.74	754.36	753.21	751.63	4.73
100yr	755.06	**755.17**	755.16	754.99	754.17	752.59	5.10
500yr		**755.50**			755.28	754.79	5.43

127 Lincoln Ave - Front Driveway (Node 97) Rim = **754.59**

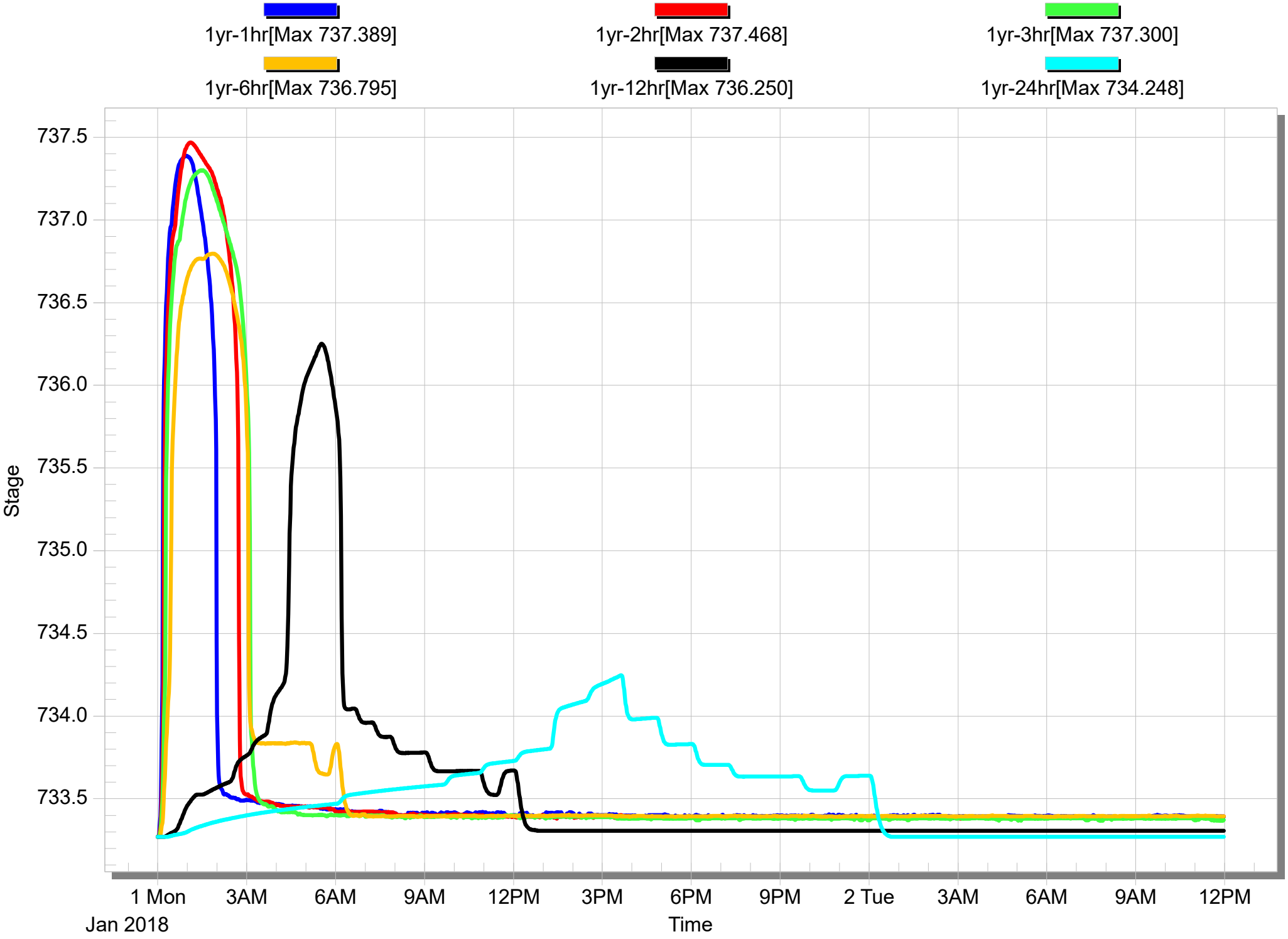
Return Period	1hr	2hr	3hr	6hr	12hr	24hr	Max Depth
1yr	**751.95**	750.50	750.27	750.23	750.16	750.13	0.00
5yr	**755.64**	755.46	754.57	751.90	750.24	750.19	1.05
10yr	**755.75**	755.67	755.52	754.42	750.39	750.22	1.16
25yr	**755.82**	755.77	755.72	755.55	752.35	750.26	1.23
50yr	**755.86**	755.82	755.78	755.70	753.75	751.11	1.27
100yr	**755.90**	755.87	755.83	755.77	755.37	752.38	1.31
500yr		**755.94**			755.76	755.61	1.35

525 W Madison Street (Node 12)
Existing Conditions

PROJECT SITE:

Wheaton Flood Study
206 W Jefferson Ave & Madison Avenue Areas

Node - Node12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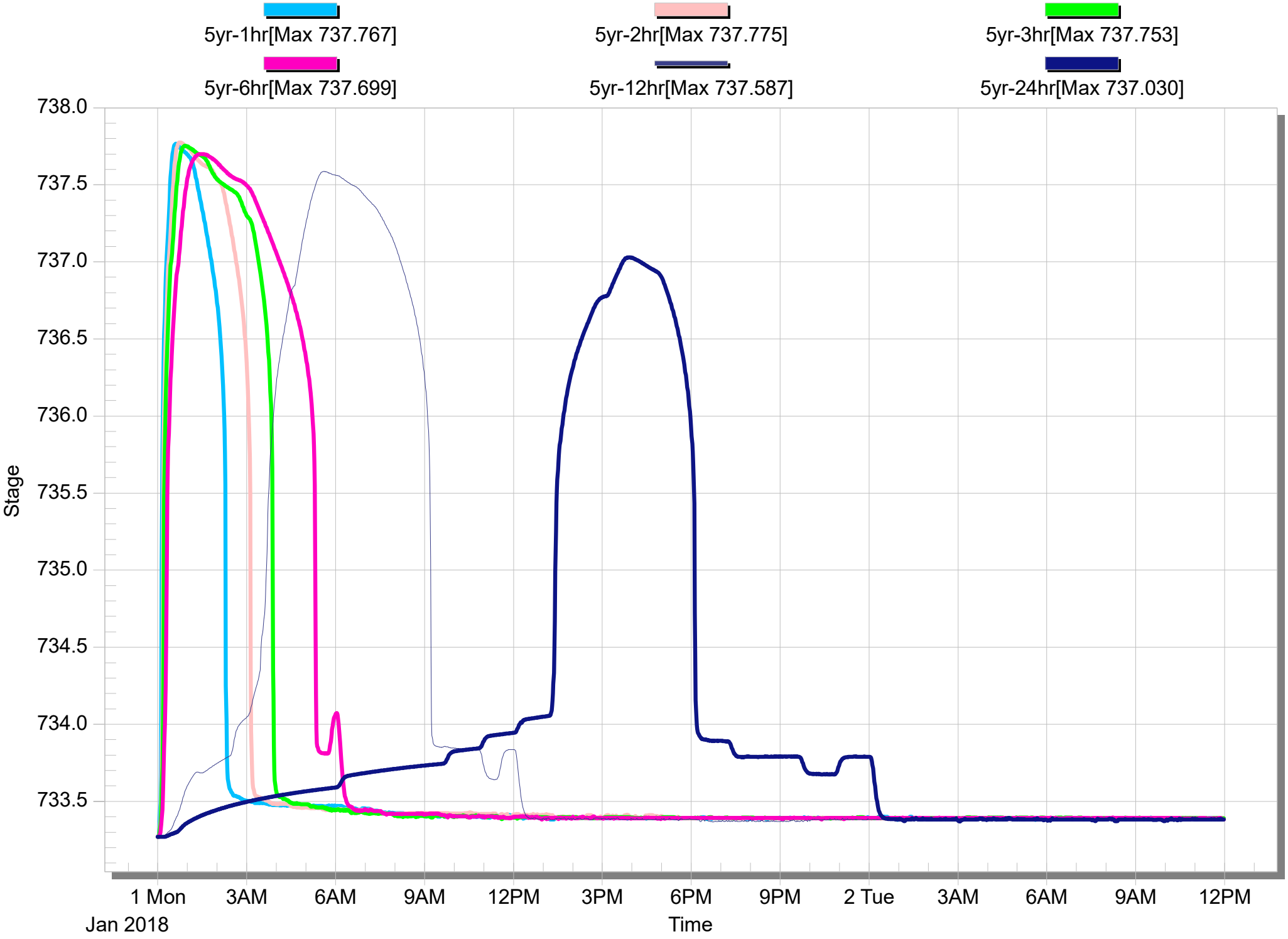
1yr-2hr[Max 737.468]
1yr-3hr[Max 737.300]
1yr-6hr[Max 736.795]
1yr-12hr[Max 736.250]
1yr-24hr[Max 734.248]
737.5
737.0
736.5
736.0
735.5
735.0
734.5
734.0
733.5
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node12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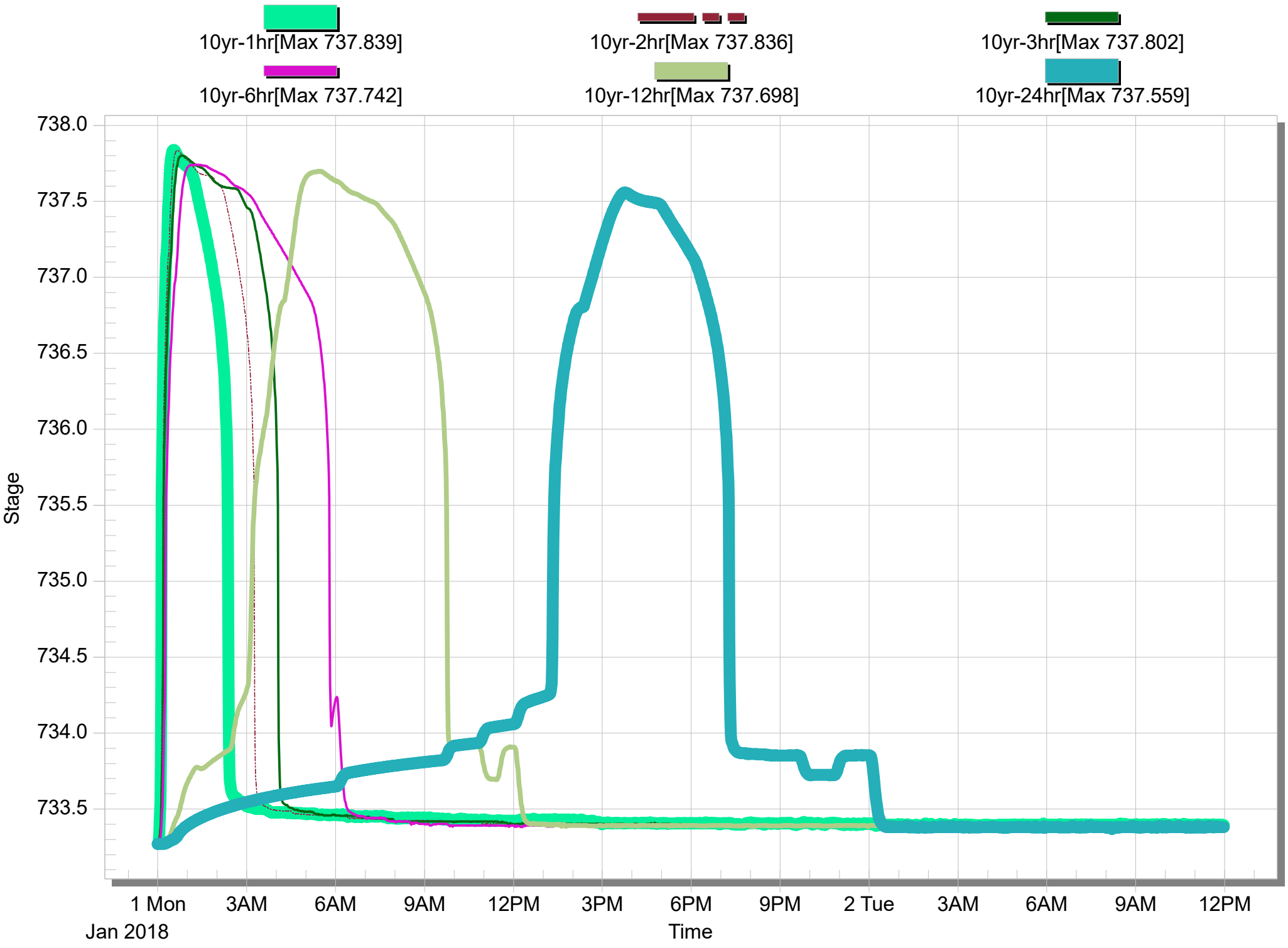
5yr-2hr[Max 737.775]
5yr-3hr[Max 737.753]
5yr-6hr[Max 737.699]
5yr-12hr[Max 737.587]
5yr-24hr[Max 737.030]
738.0
737.5
737.0
736.5
736.0
735.5
735.0
734.5
734.0
733.5
Stage
1 Mon
Jan 2018
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Time

Node - Node12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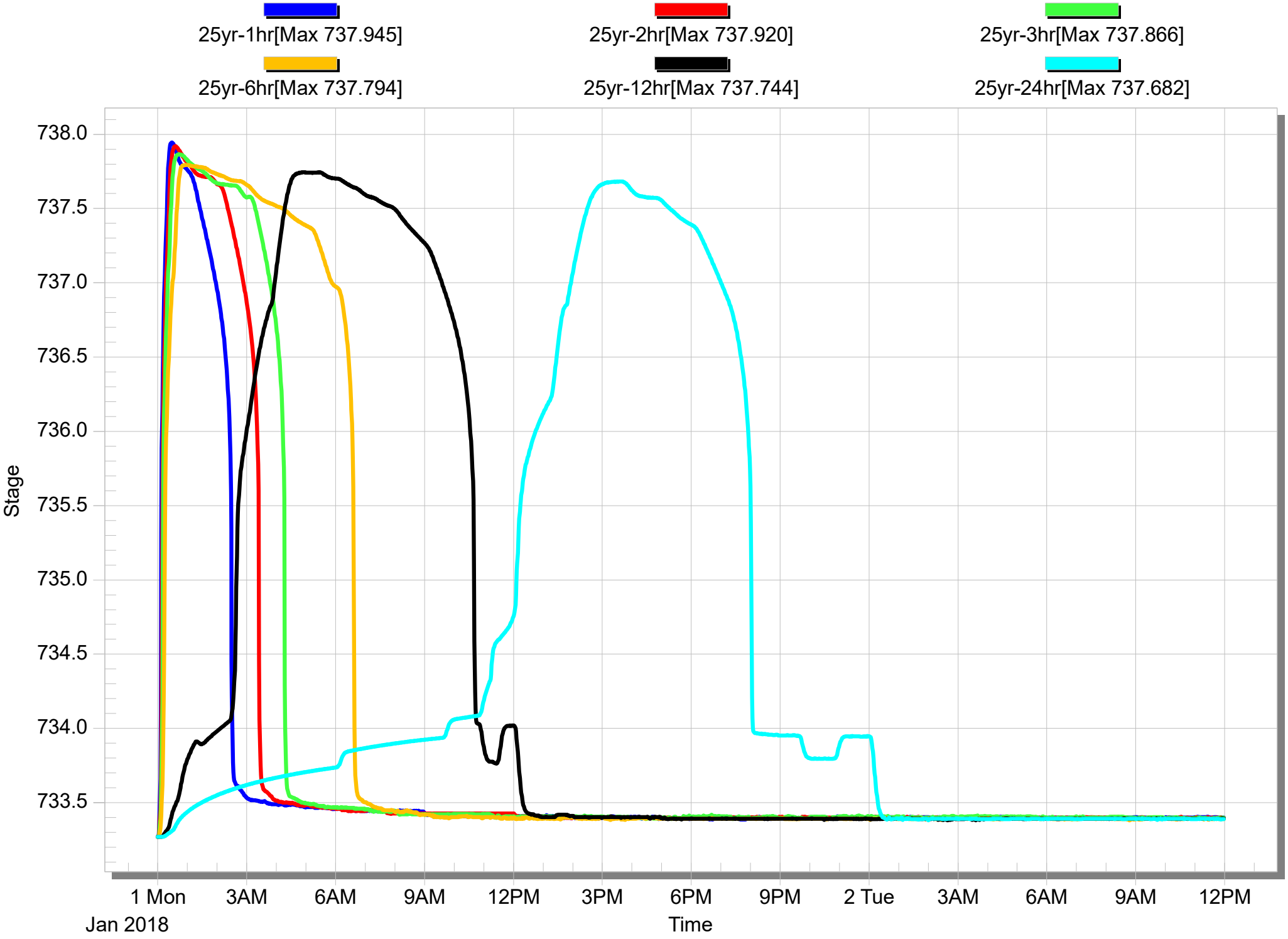
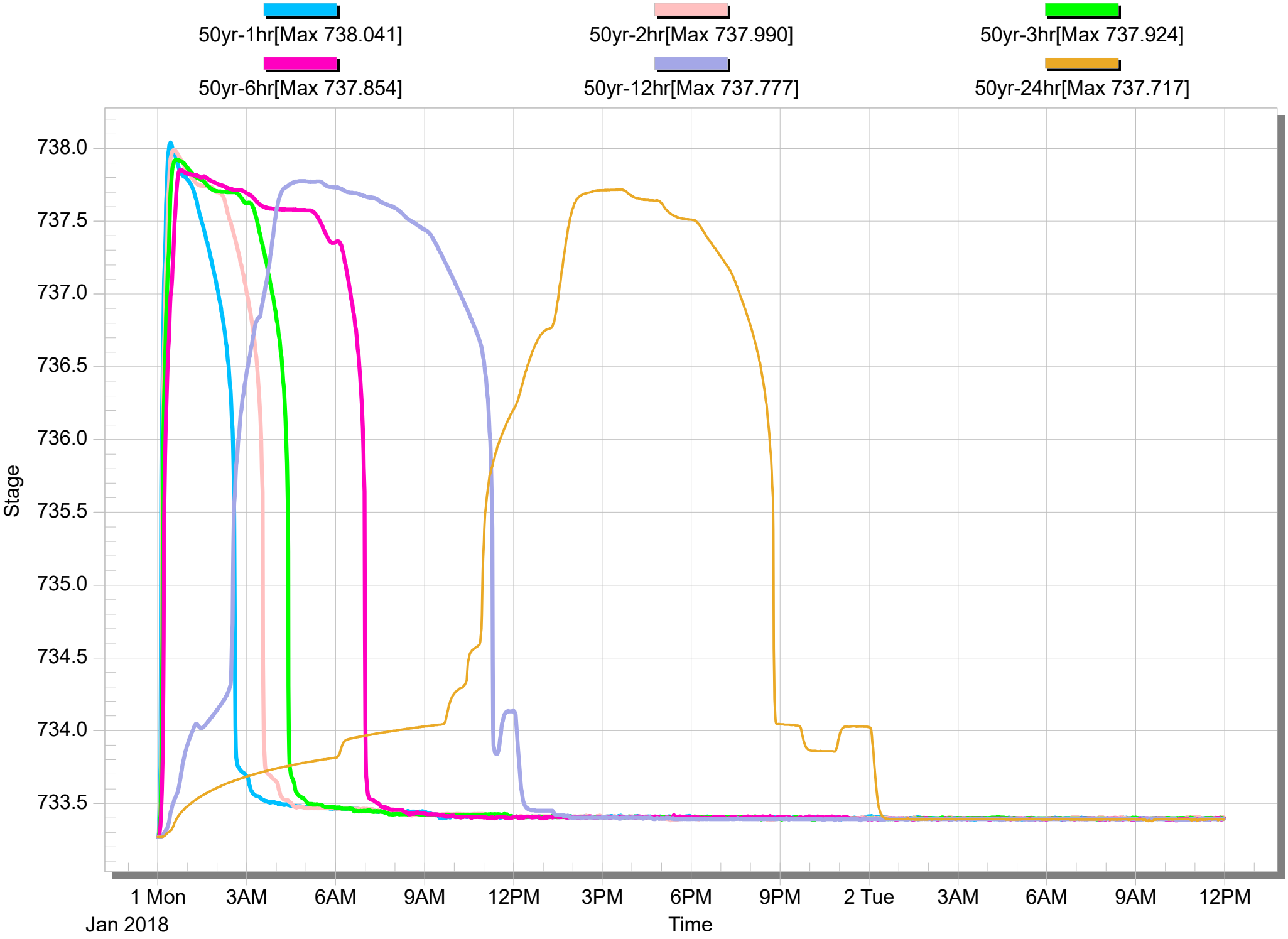
10yr-2hr[Max 737.836]
10yr-3hr[Max 737.802]
10yr-6hr[Max 737.742]
10yr-12hr[Max 737.698]
10yr-24hr[Max 737.559]
738.0
737.5
737.0
736.5
736.0
735.5
735.0
734.5
734.0
733.5
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node12


25yr-1hr[Max 737.945]
25yr-2hr[Max 737.920]
25yr-3hr[Max 737.866]
25yr-6hr[Max 737.794]
25yr-12hr[Max 737.744]
25yr-24hr[Max 737.682]
738.0
737.5
737.0
736.5
736.0
735.5
735.0
734.5
734.0
733.5
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node12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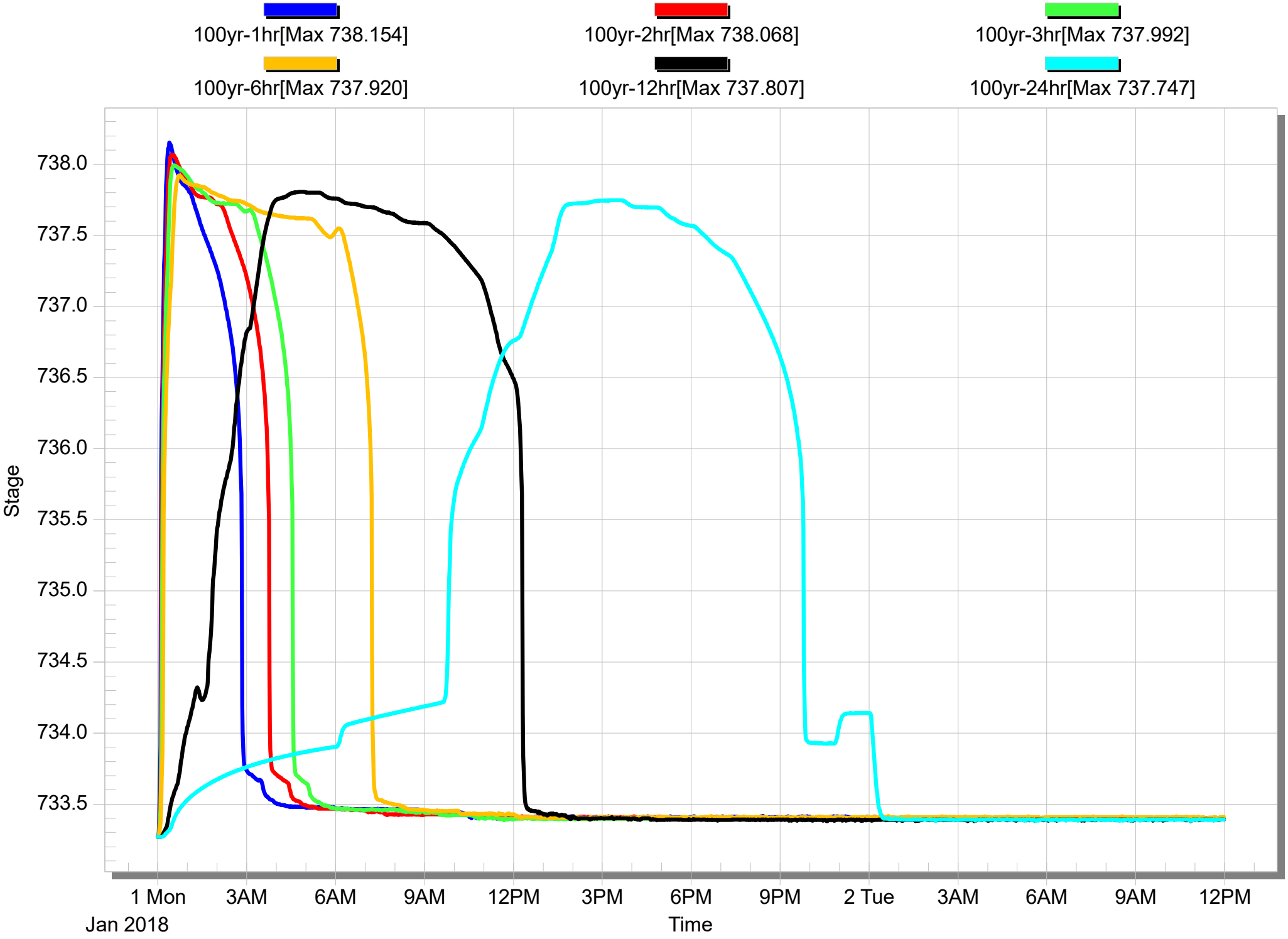
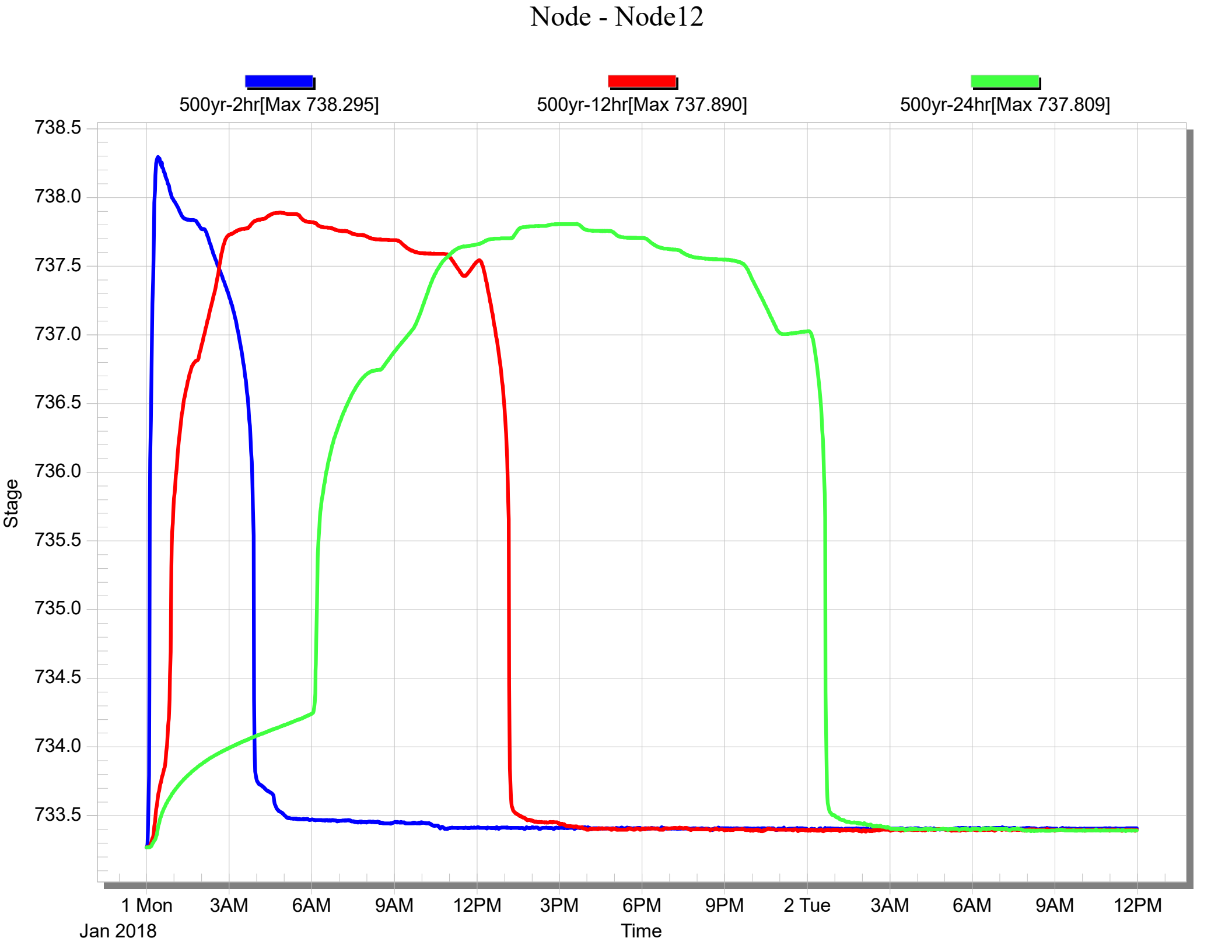
50yr-2hr[Max 737.990]
50yr-3hr[Max 737.924]
50yr-6hr[Max 737.854]
50yr-12hr[Max 737.777]
50yr-24hr[Max 737.717]
738.0
737.5
737.0
736.5
736.0
735.5
735.0
734.5
734.0
733.5
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node12


100yr-1hr[Max 738.154]
100yr-2hr[Max 738.068]
100yr-3hr[Max 737.992]
100yr-6hr[Max 737.920]
100yr-12hr[Max 737.807]
100yr-24hr[Max 737.747]
738.0
737.5
737.0
736.5
736.0
735.5
735.0
734.5
734.0
733.5
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time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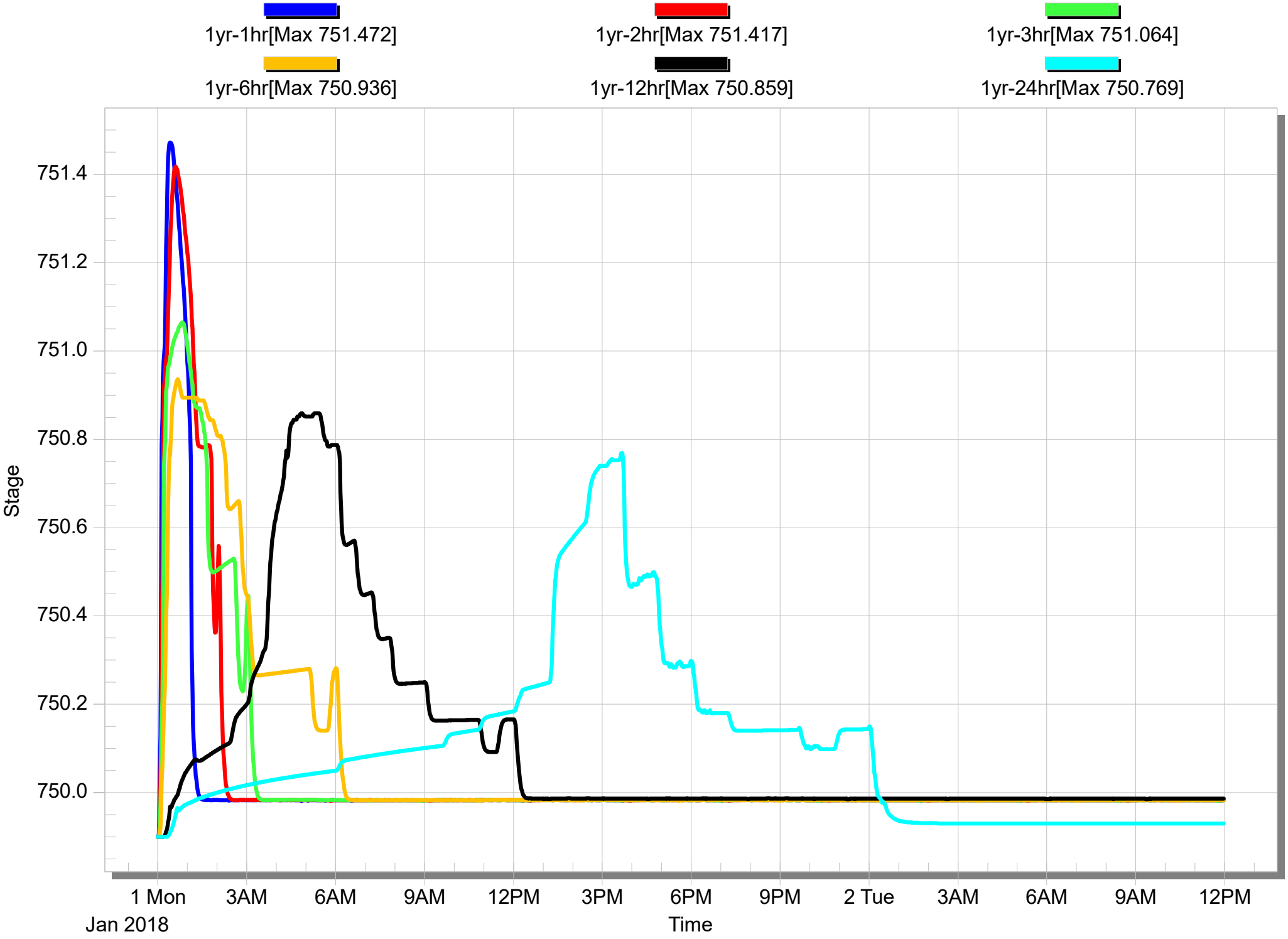
500yr-12hr[Max 737.890]
500yr-24hr[Max 737.809]
738.5
738.0
737.5
737.0
736.5
736.0
735.5
735.0
734.5
734.0
733.5
Stage
1 Mon
Jan 2018
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Time

206 W Jefferson Ave (Node 49)
Existing Conditions

PROJECT SITE:

Wheaton Flood Study
206 W Jefferson Ave & Madison Avenue Areas

Node - Node49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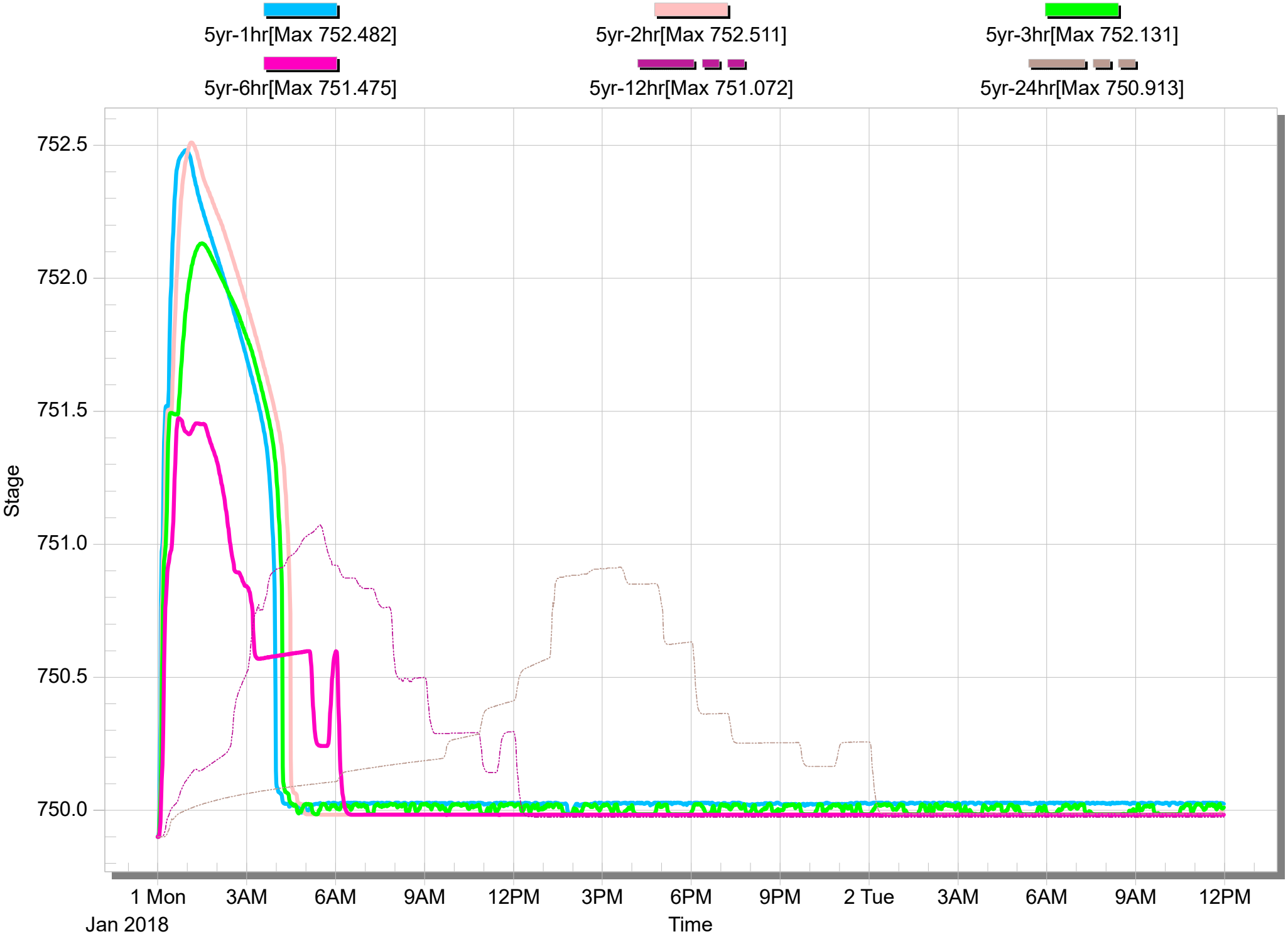
1yr-2hr[Max 751.417]
1yr-3hr[Max 751.064]
1yr-6hr[Max 750.936]
1yr-12hr[Max 750.859]
1yr-24hr[Max 750.769]
751.4
751.2
751.0
750.8
750.6
750.4
750.2
750.0
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node49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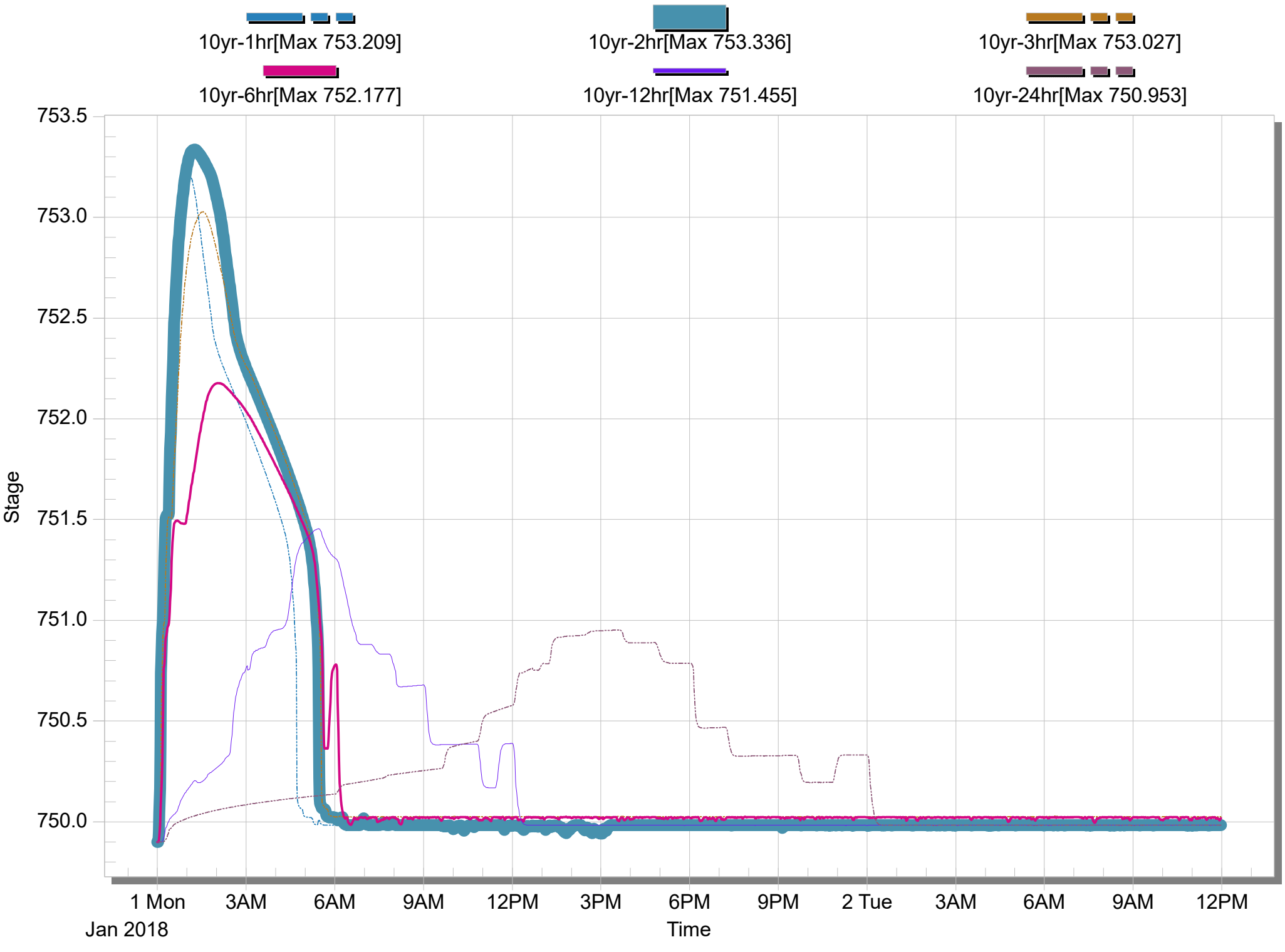
5yr-2hr[Max 752.511]
5yr-3hr[Max 752.131]
5yr-6hr[Max 751.475]
5yr-12hr[Max 751.072]
5yr-24hr[Max 750.913]
752.5
752.0
751.5
751.0
750.5
750.0
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node49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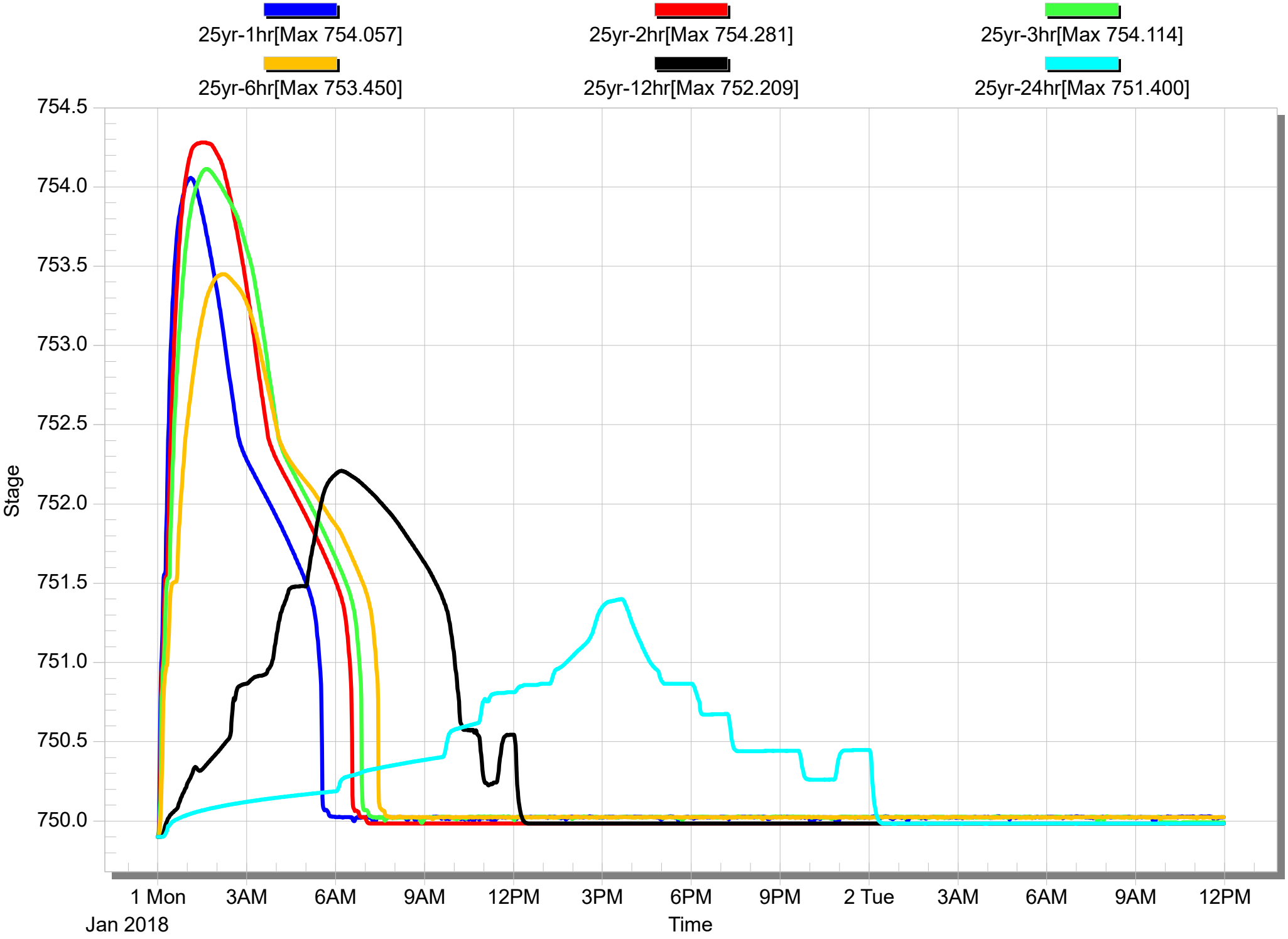
10yr-2hr[Max 753.336]
10yr-3hr[Max 753.027]
10yr-6hr[Max 752.177]
10yr-12hr[Max 751.455]
10yr-24hr[Max 750.953]
753.5
753.0
752.5
752.0
751.5
751.0
750.5
750.0
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node49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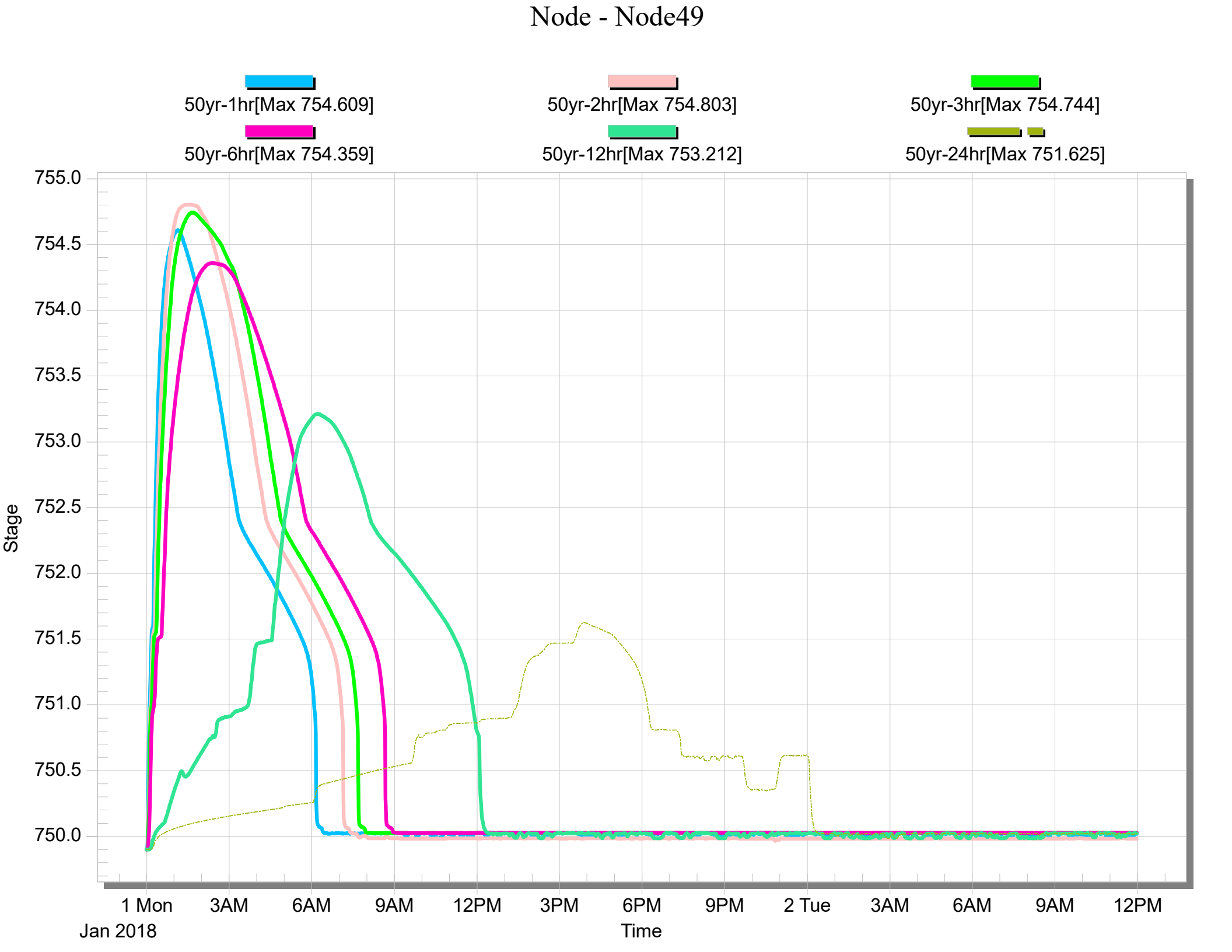
25yr-2hr[Max 754.281]
25yr-3hr[Max 754.114]
25yr-6hr[Max 753.450]
25yr-12hr[Max 752.209]
25yr-24hr[Max 751.400]
754.5
754.0
753.5
753.0
752.5
752.0
751.5
751.0
750.5
750.0
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time


Node - Node49
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50yr-2hr[Max 754.803]
50yr-3hr[Max 754.744]
50yr-6hr[Max 754.359]
50yr-12hr[Max 753.212]
50yr-24hr[Max 751.625]
755.0
754.5
754.0
753.5
753.0
752.5
752.0
751.5
751.0
750.5
750.0
Stage
1 Mon
3AM
6AM
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12PM
3PM
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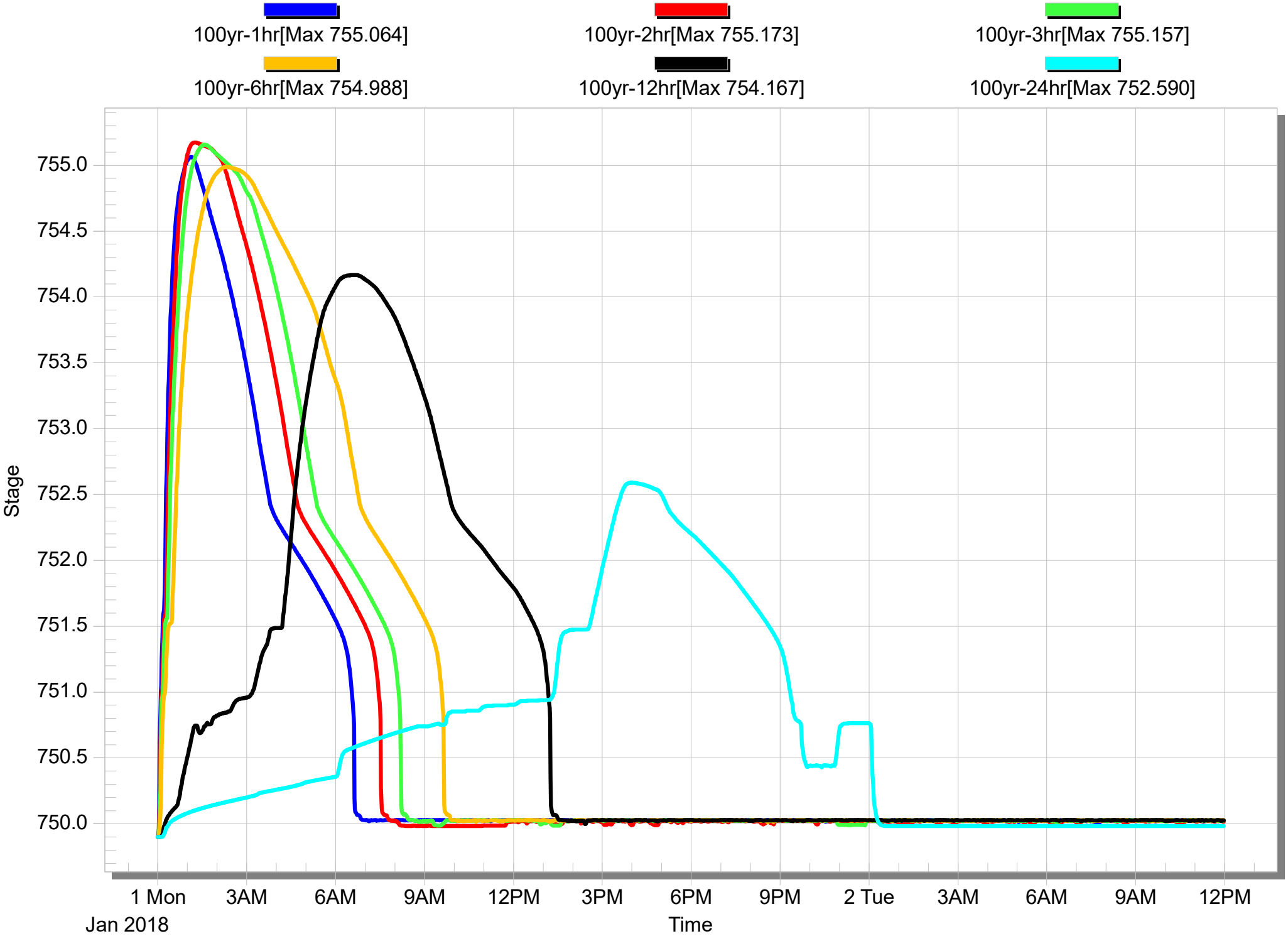
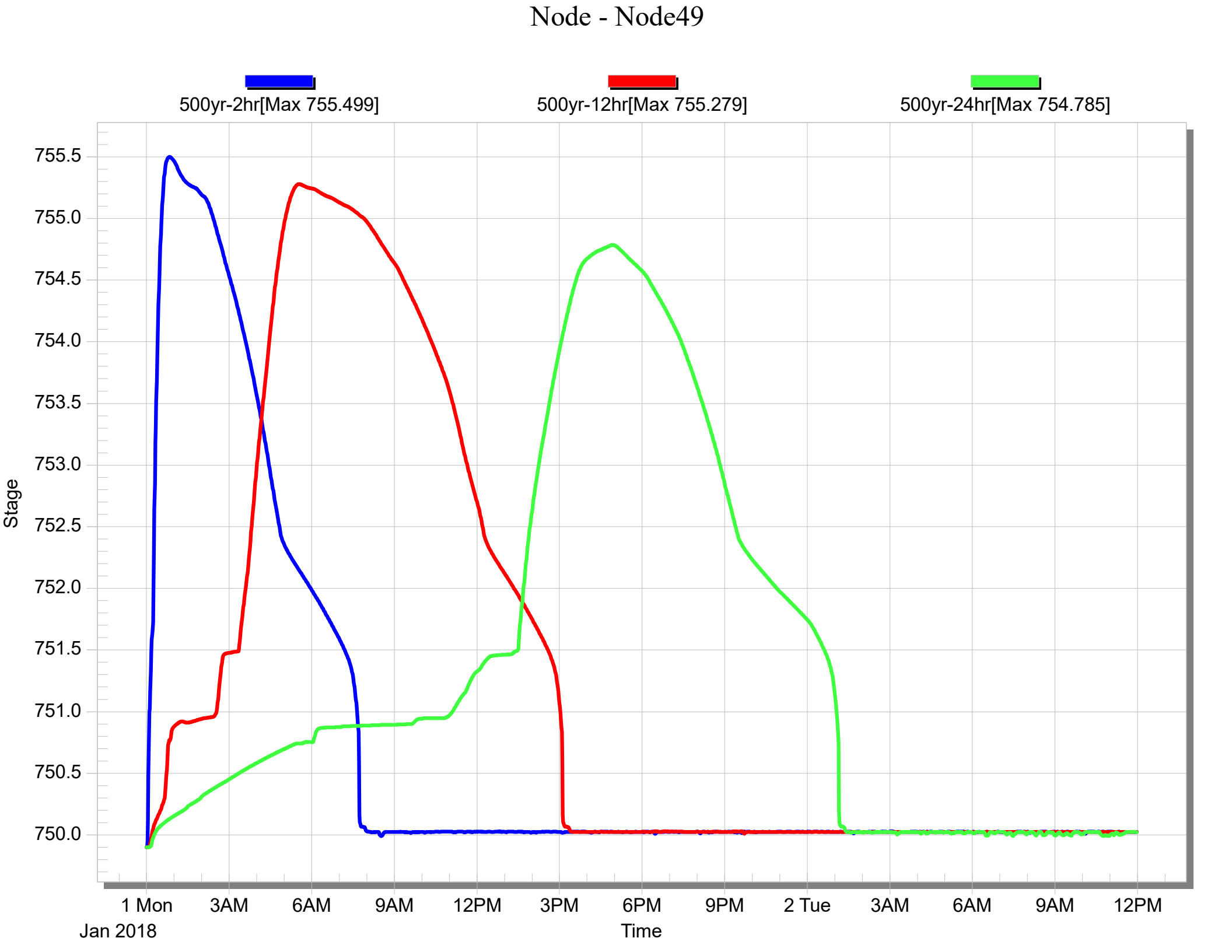
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node49


100yr-1hr[Max 755.064]
100yr-2hr[Max 755.173]
100yr-3hr[Max 755.157]
100yr-6hr[Max 754.988]
100yr-12hr[Max 754.167]
100yr-24hr[Max 752.590]
755.0
754.5
754.0
753.5
753.0
752.5
752.0
751.5
751.0
750.5
750.0
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time


Node - Node49
500yr-2hr[Max 755.499]
500yr-12hr[Max 755.279]
500yr-24hr[Max 754.785]
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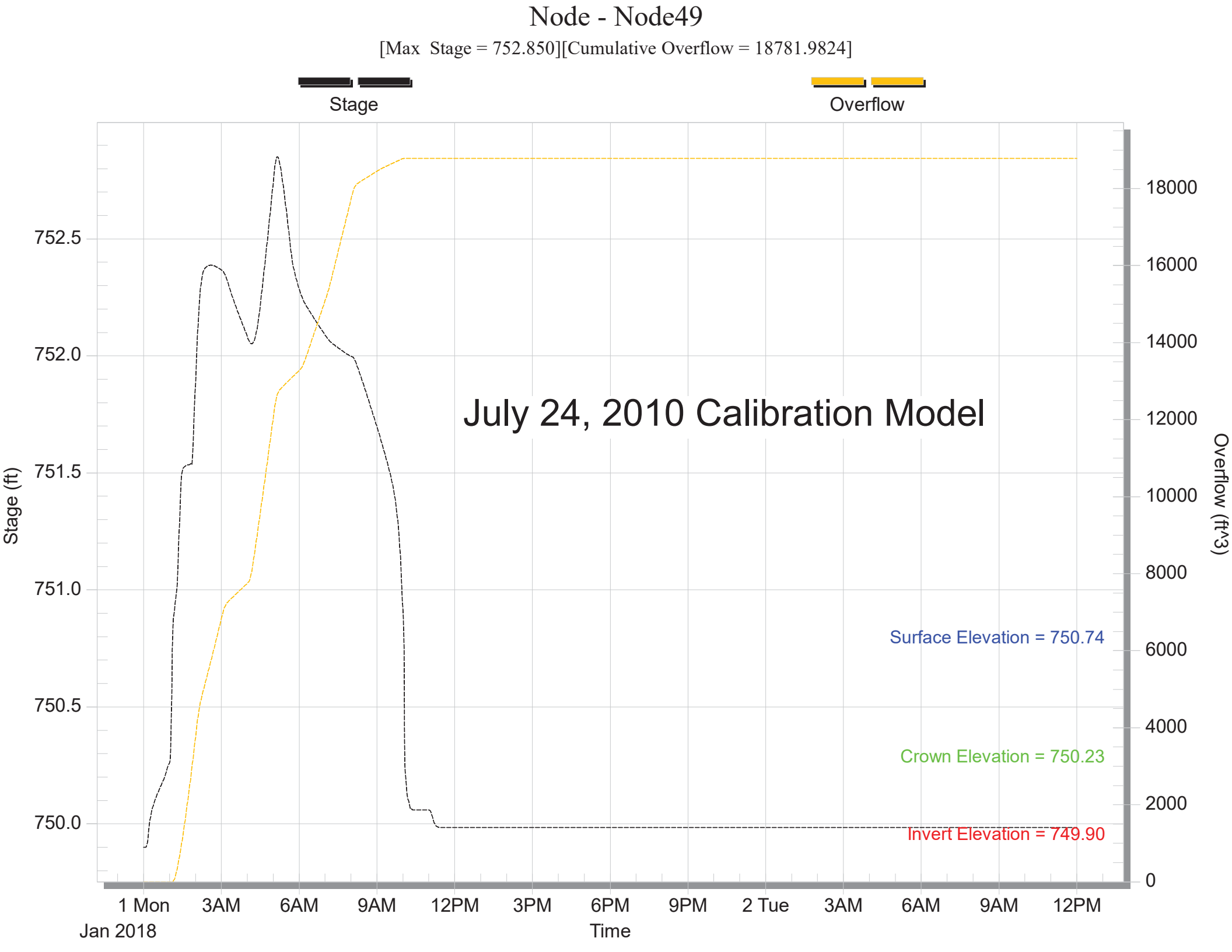
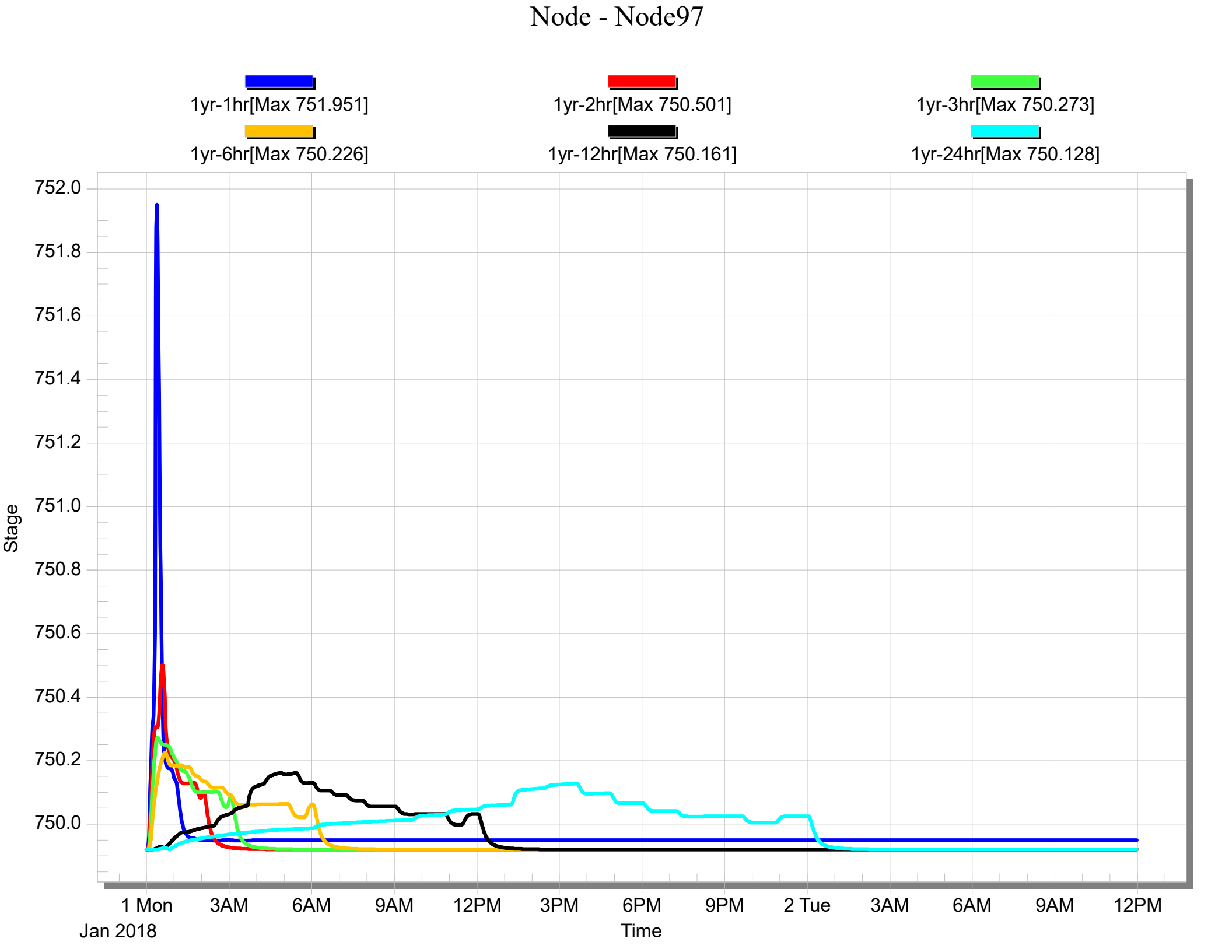
754.5
754.0
753.5
753.0
752.5
752.0
751.5
751.0
750.5
750.0
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time


Node - Node49
[Max Stage = 752.850][Cumulative Overflow = 18781.9824]
Stage
Overflow
July 24, 2010 Calibration Model
Surface Elevation = 750.74
Crown Elevation = 750.23
Invert Elevation = 749.90
Stage (ft)
752.5
752.0
751.5
751.0
750.5
750.0
Overflow (ft^3)
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1 Mon
Jan 2018
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Time

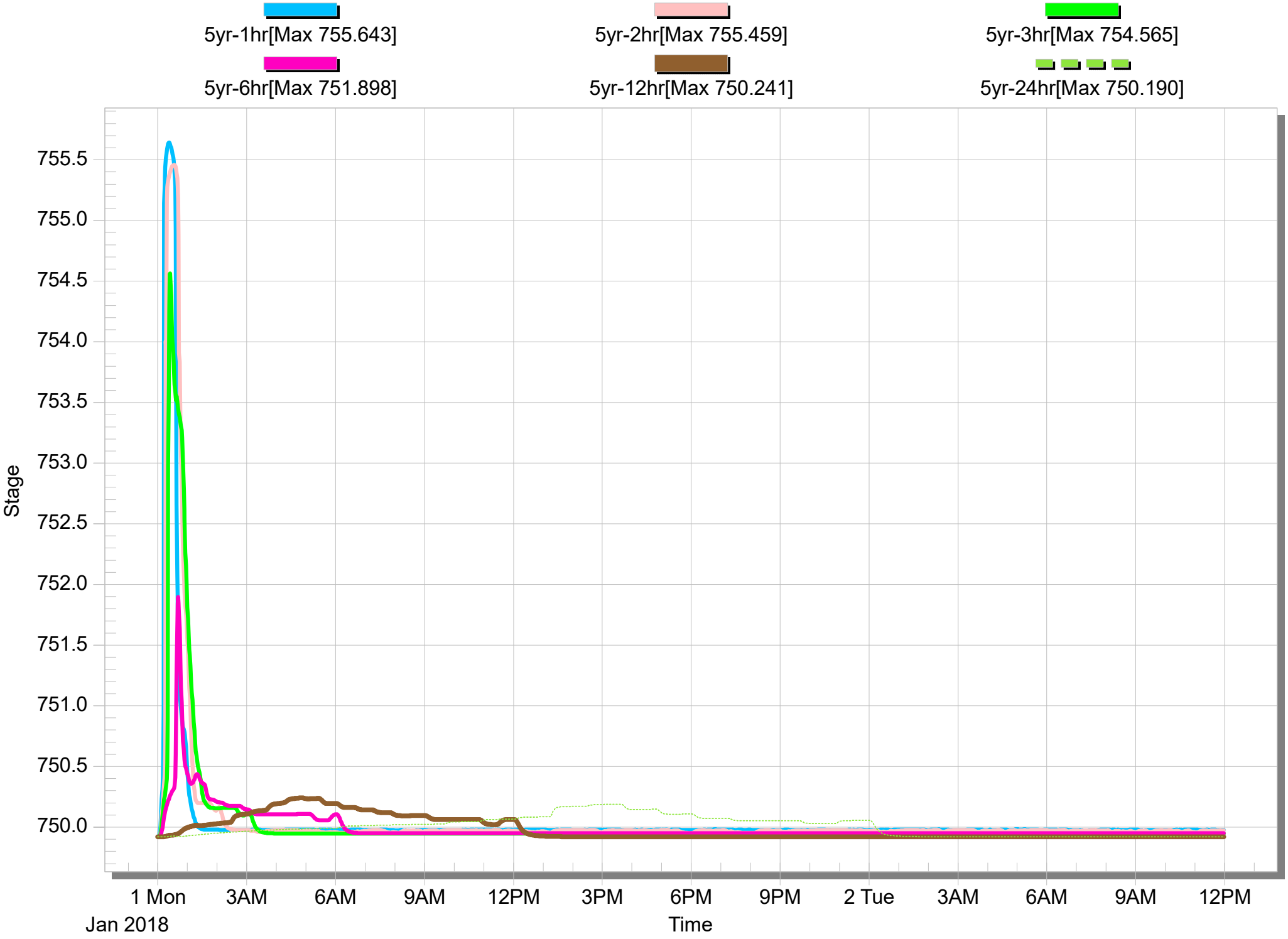
127 W Lincoln Ave (Node 97)
Existing Conditions

PROJECT SITE:

Wheaton Flood Study
206 W Jefferson Ave & Madison Avenue Areas


Node - Node97
1yr-1hr[Max 751.951]
1yr-2hr[Max 750.501]
1yr-3hr[Max 750.273]
1yr-6hr[Max 750.226]
1yr-12hr[Max 750.161]
1yr-24hr[Max 750.128]
752.0
751.8
751.6
751.4
751.2
751.0
750.8
750.6
750.4
750.2
750.0
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node97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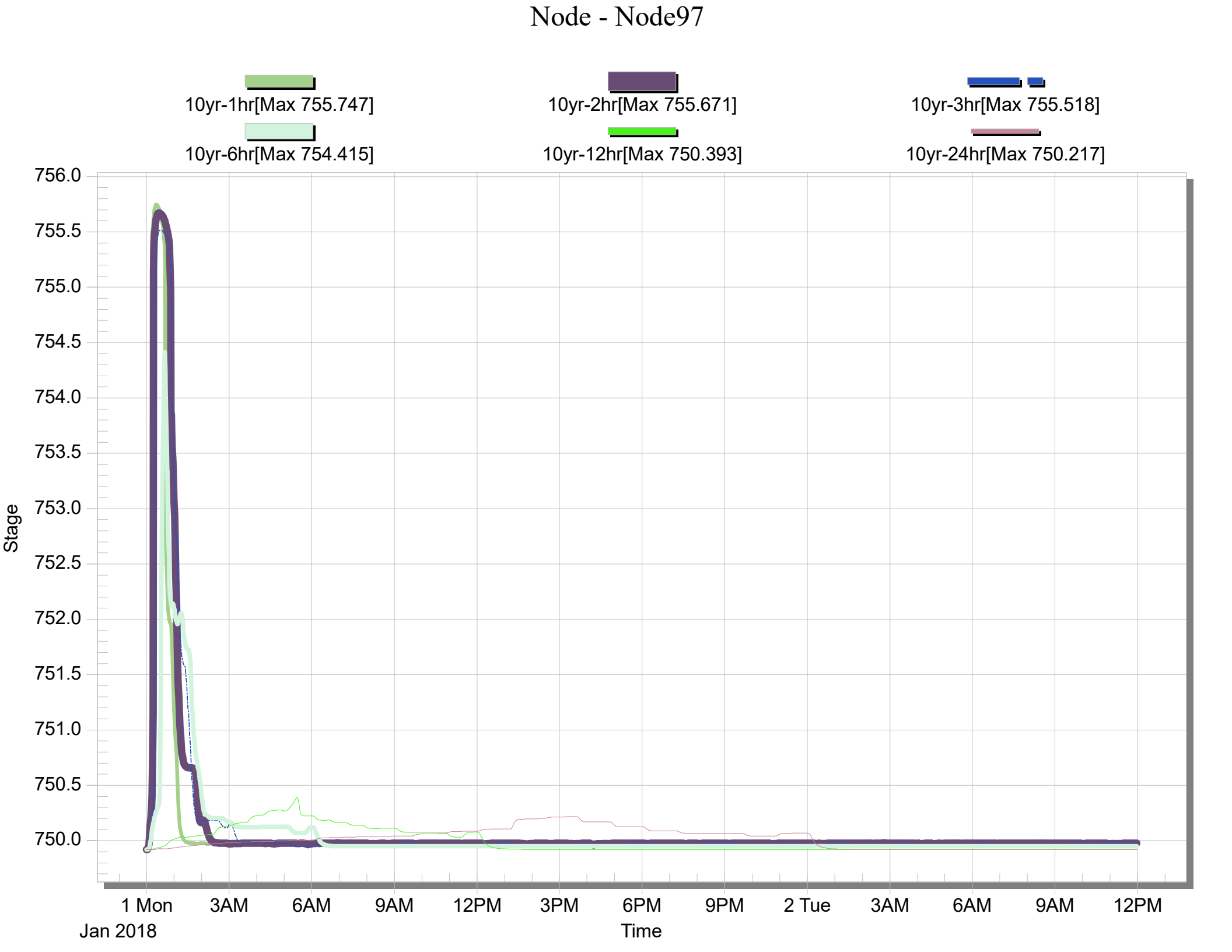
5yr-2hr[Max 755.459]
5yr-3hr[Max 754.565]
5yr-6hr[Max 751.898]
5yr-12hr[Max 750.241]
5yr-24hr[Max 750.190]
755.5
755.0
754.5
754.0
753.5
753.0
752.5
752.0
751.5
751.0
750.5
750.0
Stage
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time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10yr-3hr[Max 755.518]
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10yr-12hr[Max 750.393]
10yr-24hr[Max 750.217]
Stage
756.0
755.5
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754.5
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753.5
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1 Mon
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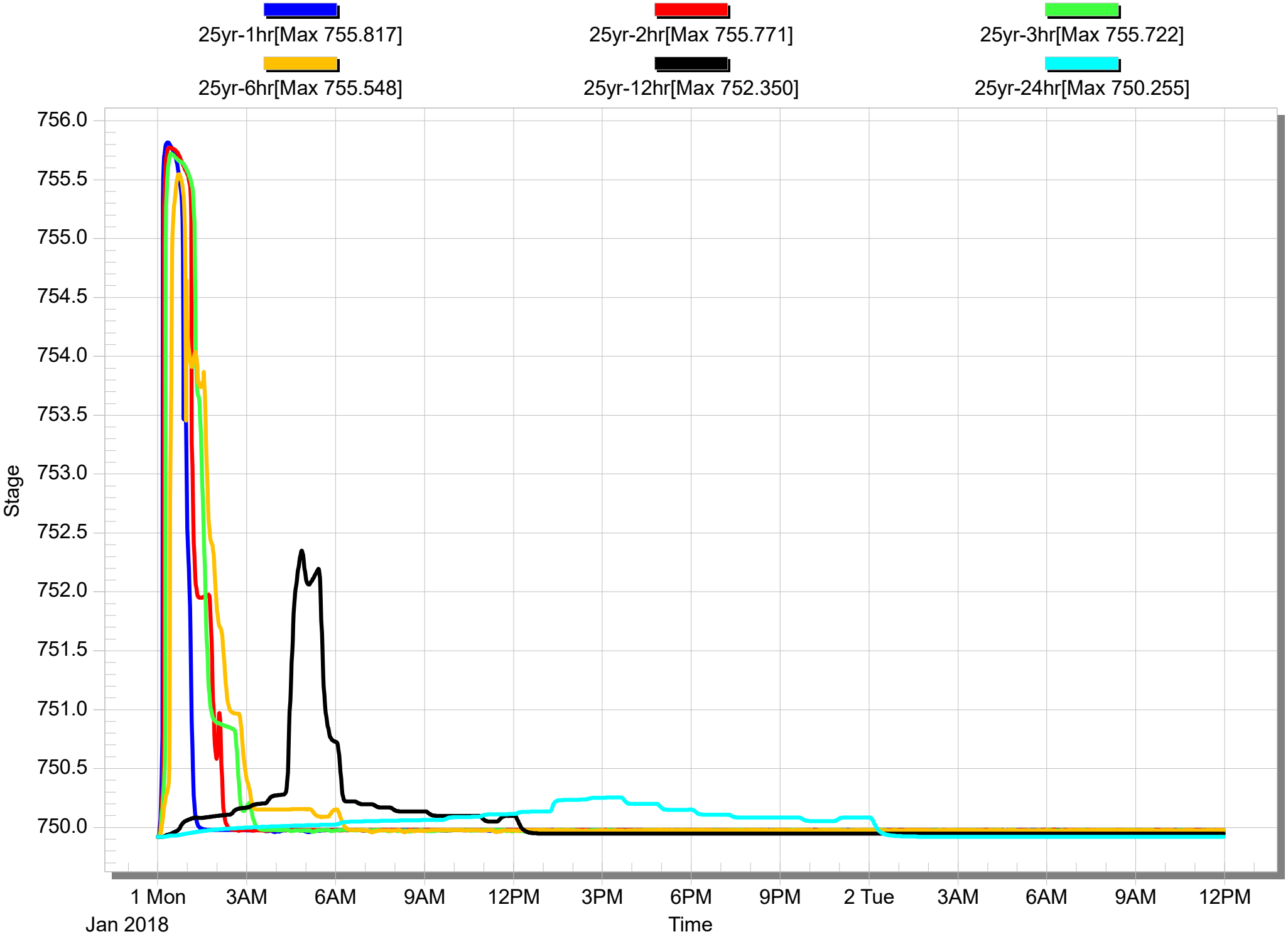
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node97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25yr-3hr[Max 755.722]
25yr-6hr[Max 755.548]
25yr-12hr[Max 752.350]
25yr-24hr[Max 750.255]
Stage
756.0
755.5
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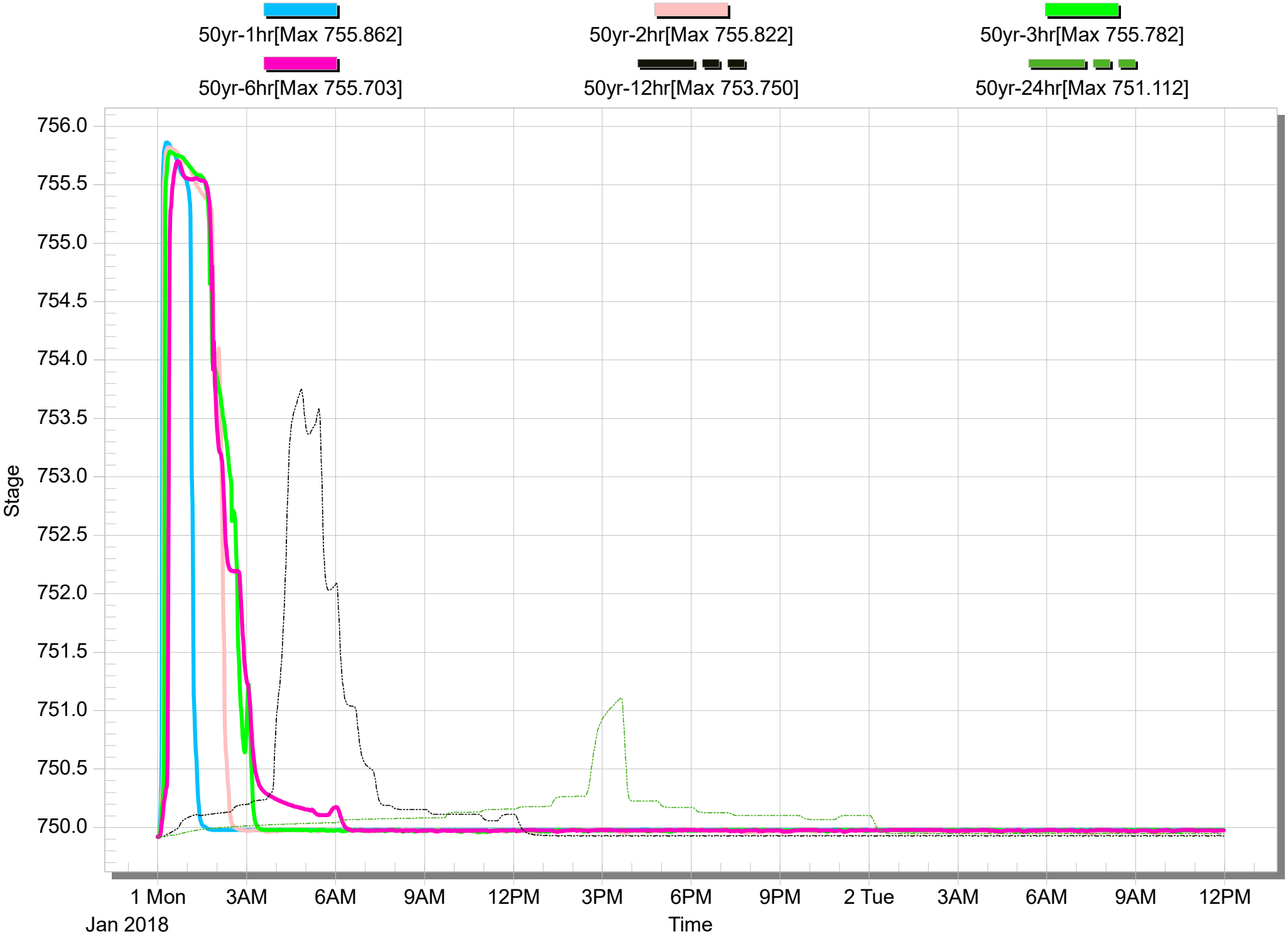
750.0
1 Mon
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node97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50yr-3hr[Max 755.782]
50yr-6hr[Max 755.703]
50yr-12hr[Max 753.750]
50yr-24hr[Max 751.112]
Stage
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755.5
755.0
754.5
754.0
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753.0
752.5
752.0
751.5
751.0
750.5
750.0
1 Mon
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6AM
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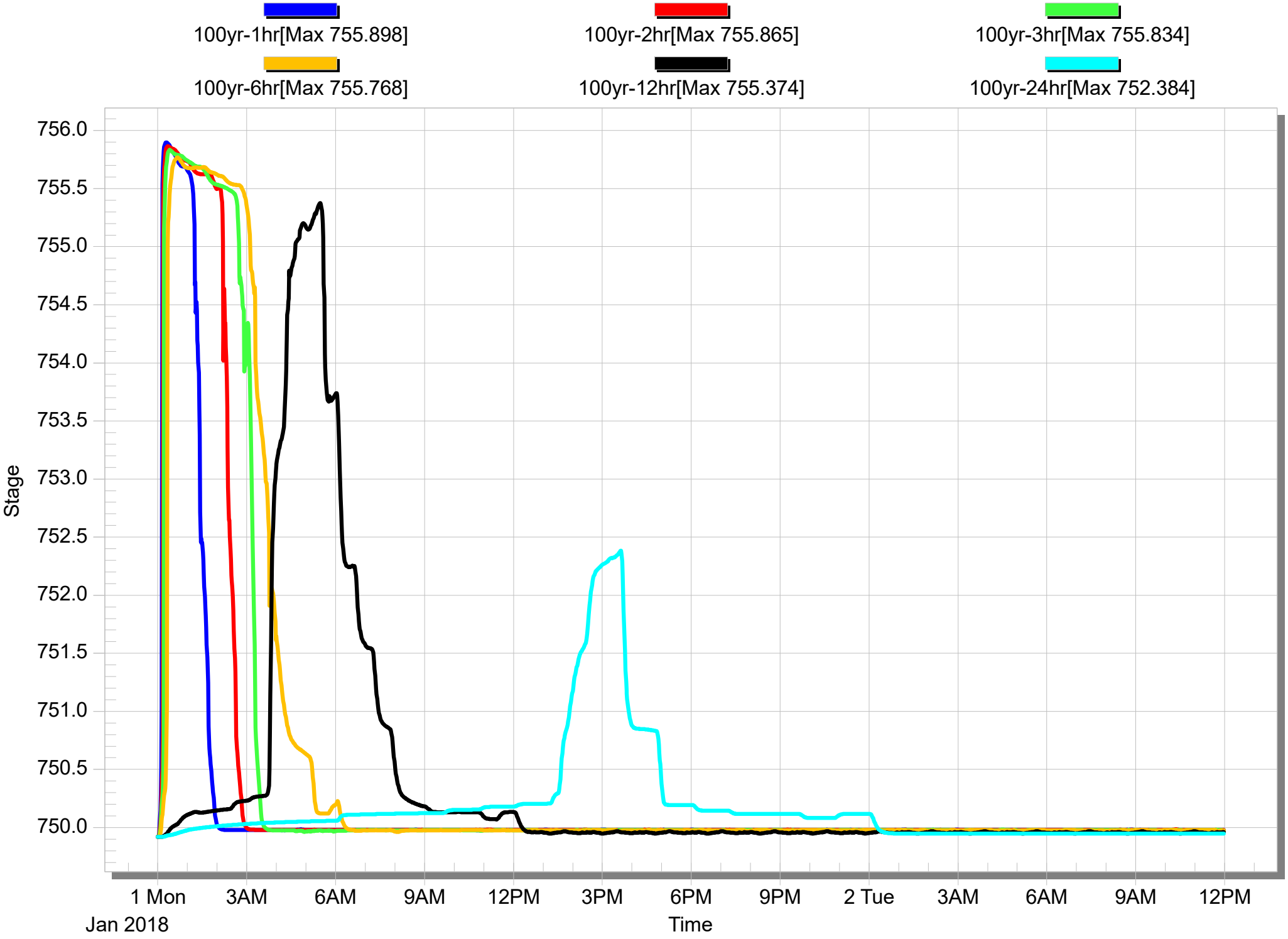
6PM
9PM
2 Tue
3AM
6AM
9AM
12PM
Jan 2018
Time

Node - Node97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100yr-6hr[Max 755.768]
100yr-12hr[Max 755.374]
100yr-24hr[Max 752.384]
Stage
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755.0
754.5
754.0
753.5
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1 Mon
3AM
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2 Tue
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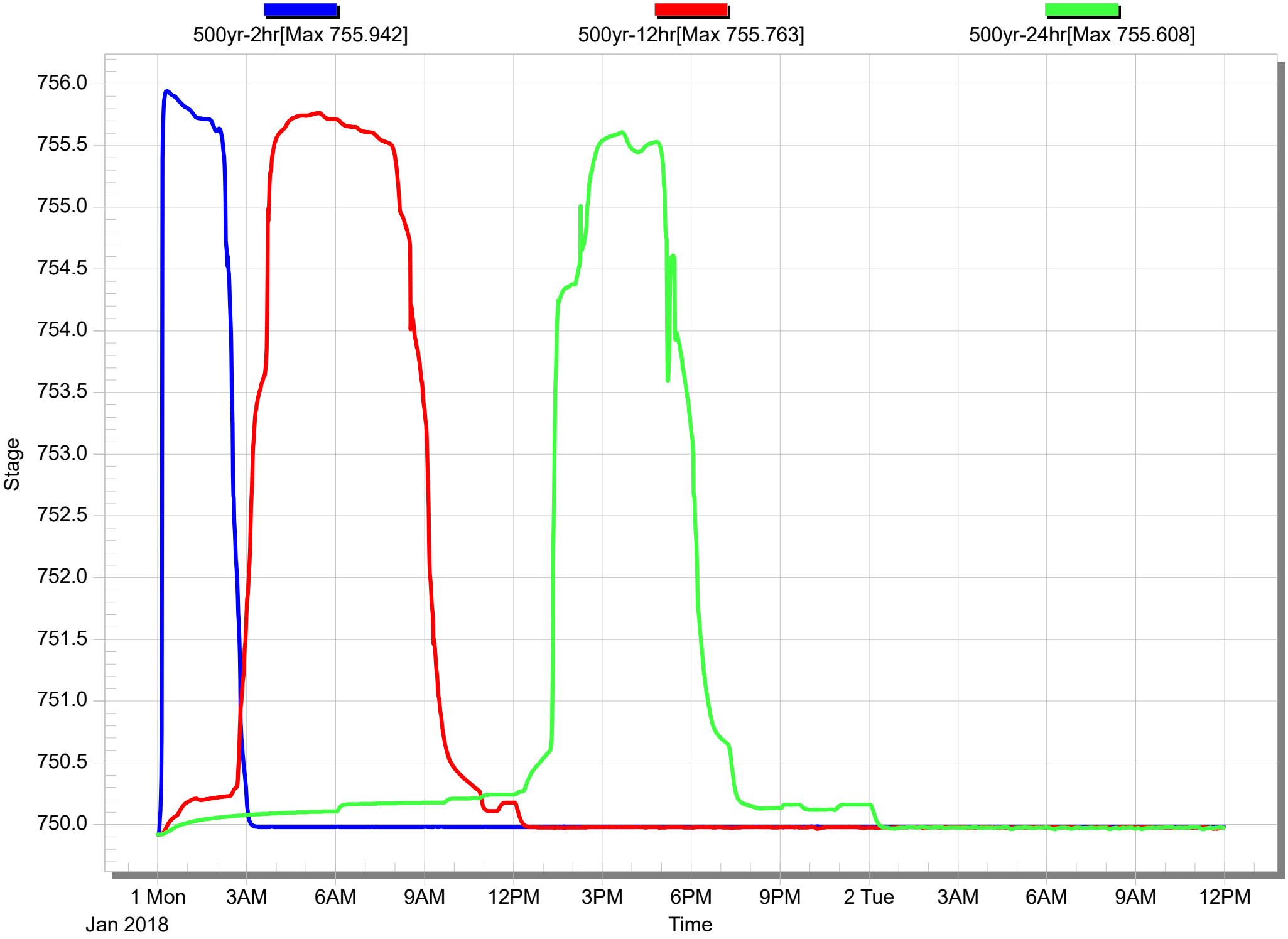
6AM
9AM
12PM
Jan 2018
Time

Node - Node97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500yr-24hr[Max 755.608]
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Jan 2018
3AM
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2 Tue
3AM
6AM
9AM
12PM
Time

0 150 300

GRAPHIC SCALE - FEET

Flood Prone Areas Study
Madison St. & Jefferson Ave. Areas

Prepared For:
CITY OF WHEATON
303 W Wesley Street
Wheaton, IL 60187
630-260-2000

WEBSTER, McGRATH & AHLBERG, LTD.
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PHONE: (630) 668-7076 FAX: (630) 668-7078
DESIGN FIRM LICENSE NO. 184003101

REV#	DATE	REVISION DESCRIPTION	BY

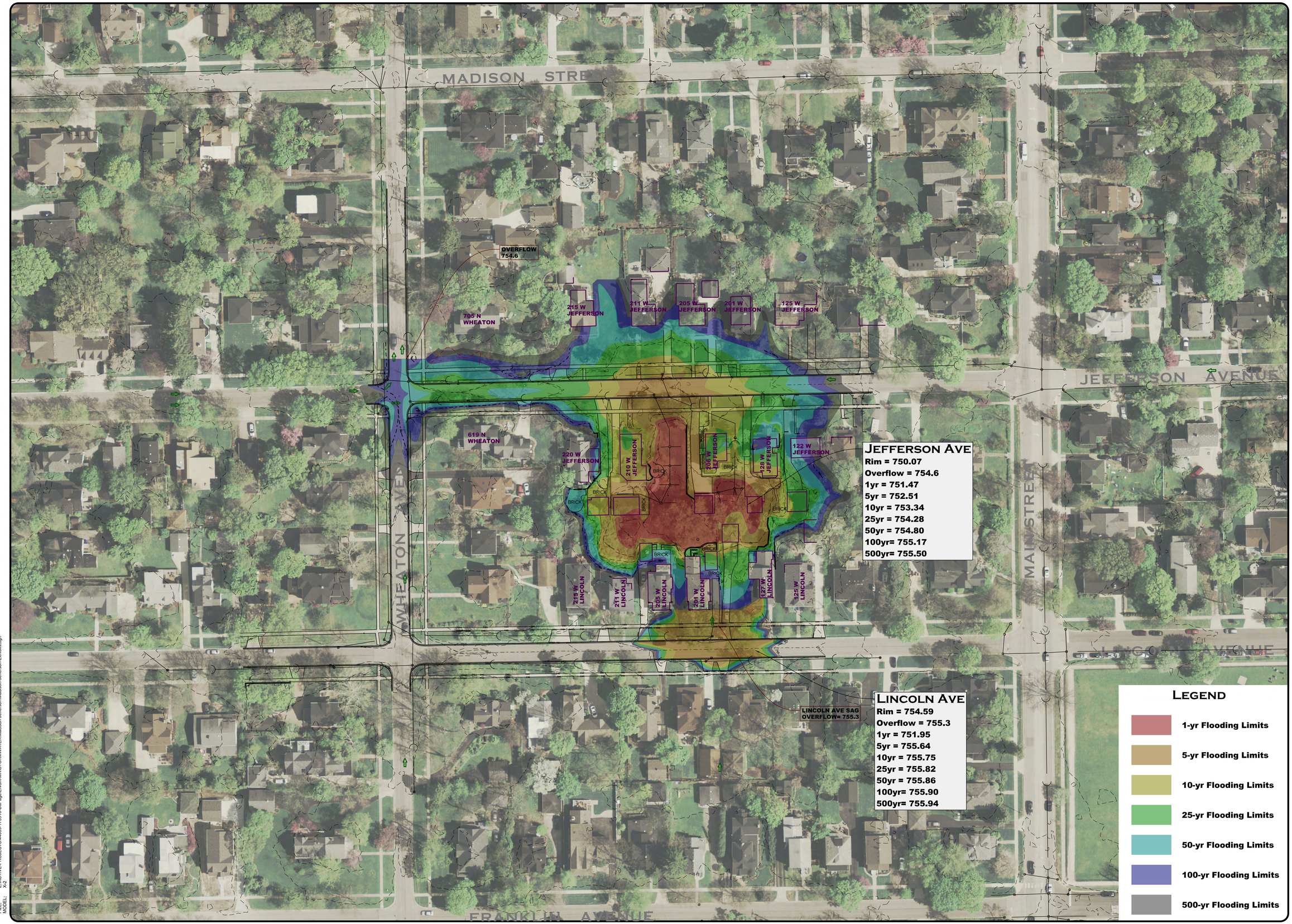
Section- Township-Range
DuPage: City of Wheaton - Milton Twp

JOB # 44059	SURV: DS / BC
DRAWN: RLS	REVIEW: SMR
SCALE: 1"=150'	DATE: 06-15-2018

SHEET NAME
PEAK FLOODING LIMITS - MADISON ST.

SHEET #
X-1

DATE: 6/20/2018
FILE: E:\ACTIVE-PROJECTS\44059-173910-DuPage\ENGR-MRKS\STORMWATER\Madison_Jefferson\Madison-Jefferson-Exhibits.dgn
MODEL: X-1



0 150 300

GRAPHIC SCALE - FEET

Flood Prone Areas Study
Madison St. & Jefferson Ave. Areas

Prepared For:
CITY OF WHEATON
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630-260-2000

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207 SOUTH NORTHWEST HIGHWAY PARK RIDGE, ILLINOIS 60187
PHONE: (847) 823-5774 FAX: (847) 823-5780
DESIGN FIRM LICENSE NO. 184003101

BY	REVISION DESCRIPTION	DATE	REV#

Section-Township-Range
DuPage: City of Wheaton - Milton Twp

JOB # 44059	SURV: DS / BC
DRAWN: RLS	REVIEW: SMR
SCALE: 1"=150'	DATE: 06-15-2018

SHEET NAME
Peak Flood Limits - Jefferson Ave

SHEET #
X-2

DATE: 6/20/2018
FILE: E:\ACTIVE-PROJECTS\44059-173910-DuPage\ENGR-MRS\TORMWATER\Madison Jefferson\Madison-Jefferson-Exhibits.dgn
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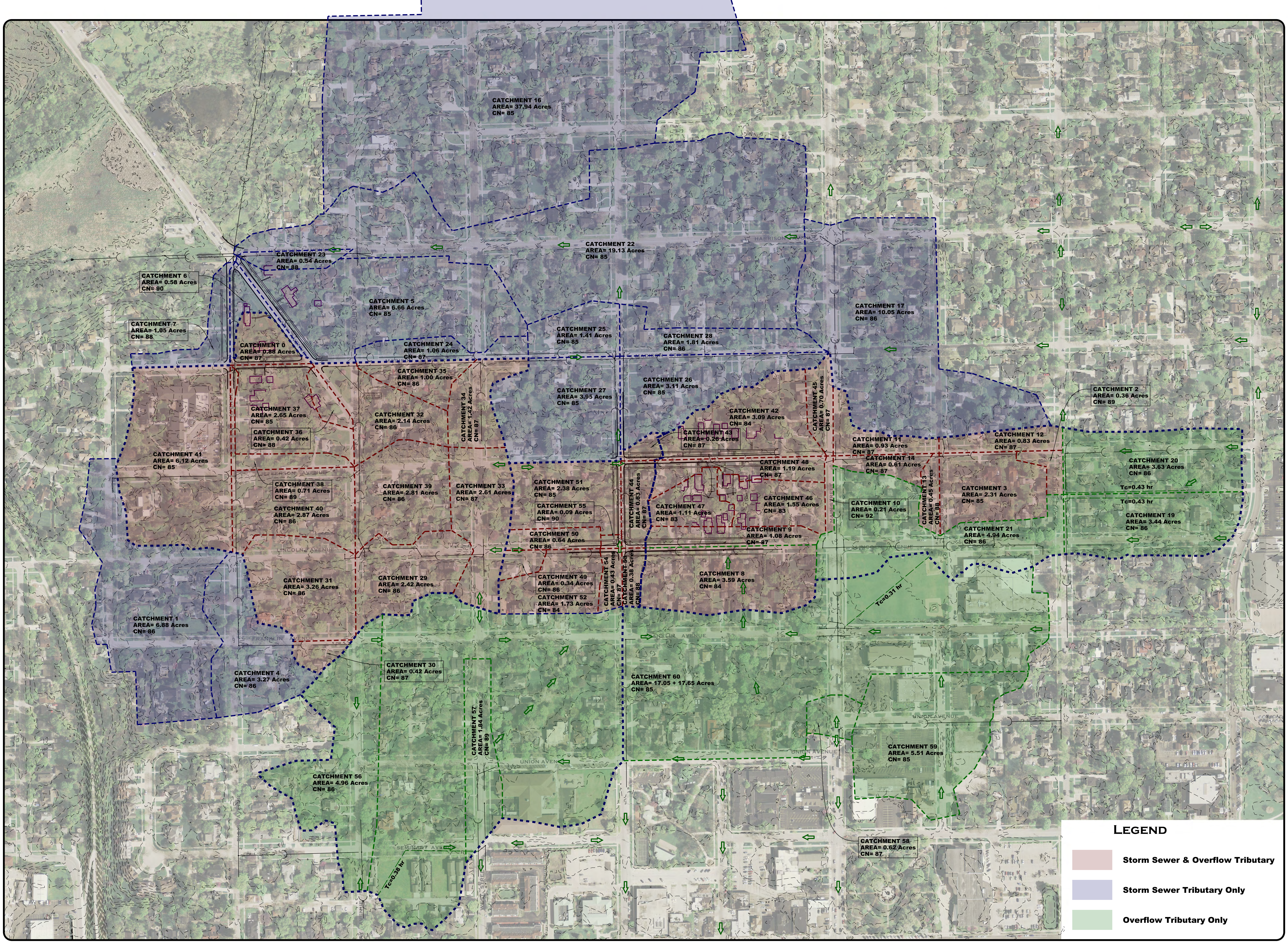
CATCHMENT 16
AREA= 37.94 Acres
CN= 85
CATCHMENT 22
AREA= 19.13 Acres
CN= 85
CATCHMENT 23
AREA= 0.54 Acres
CN= 88
CATCHMENT 6
AREA= 0.58 Acres
CN= 90
CATCHMENT 5
AREA= 6.66 Acres
CN= 85
CATCHMENT 7
AREA= 1.05 Acres
CN= 88
CATCHMENT 17
AREA= 10.05 Acres
CN= 86
CATCHMENT 25
AREA= 1.41 Acres
CN= 85
CATCHMENT 28
AREA= 1.81 Acres
CN= 86
CATCHMENT 24
AREA= 1.06 Acres
CN= 87
CATCHMENT 35
AREA= 1.00 Acres
CN= 86
CATCHMENT 26
AREA= 3.11 Acres
CN= 85
CATCHMENT 27
AREA= 3.95 Acres
CN= 85
CATCHMENT 2
AREA= 0.36 Acres
CN= 89
CATCHMENT 37
AREA= 2.65 Acres
CN= 85
CATCHMENT 32
AREA= 2.14 Acres
CN= 86
CATCHMENT 42
AREA= 3.09 Acres
CN= 84
CATCHMENT 36
AREA= 0.42 Acres
CN= 88
CATCHMENT 11
AREA= 0.93 Acres
CN= 87
CATCHMENT 12
AREA= 0.83 Acres
CN= 87
CATCHMENT 41
AREA= 6.12 Acres
CN= 85
CATCHMENT 14
AREA= 0.61 Acres
CN= 87
CATCHMENT 20
AREA= 3.63 Acres
CN= 86
CATCHMENT 48
AREA= 1.19 Acres
CN= 87
CATCHMENT 38
AREA= 0.71 Acres
CN= 89
CATCHMENT 39
AREA= 2.81 Acres
CN= 86
CATCHMENT 33
AREA= 2.61 Acres
CN= 87
CATCHMENT 51
AREA= 2.38 Acres
CN= 85
CATCHMENT 3
AREA= 2.31 Acres
CN= 85
CATCHMENT 10
AREA= 0.21 Acres
CN= 92
Tc=0.43 hr
Tc=0.43 hr
CATCHMENT 40
AREA= 2.87 Acres
CN= 86
CATCHMENT 55
AREA= 0.09 Acres
CN= 90
CATCHMENT 47
AREA= 1.11 Acres
CN= 83
CATCHMENT 46
AREA= 1.55 Acres
CN= 83
CATCHMENT 19
AREA= 3.44 Acres
CN= 86
CATCHMENT 9
AREA= 1.08 Acres
CN= 87
CATCHMENT 21
AREA= 4.94 Acres
CN= 86
CATCHMENT 50
AREA= 0.64 Acres
CN= 86
CATCHMENT 31
AREA= 3.26 Acres
CN= 86
CATCHMENT 29
AREA= 2.42 Acres
CN= 86
CATCHMENT 49
AREA= 0.34 Acres
CN= 86
CATCHMENT 8
AREA= 3.59 Acres
CN= 84
CATCHMENT 52
AREA= 1.73 Acres
CN= 84
Tc=0.31 hr
CATCHMENT 1
AREA= 6.88 Acres
CN= 86
CATCHMENT 30
AREA= 0.42 Acres
CN= 87
CATCHMENT 4
AREA= 3.27 Acres
CN= 86
CATCHMENT 60
AREA= 17.05 + 17.65 Acres
CN= 85
CATCHMENT 59
AREA= 5.51 Acres
CN= 85
CATCHMENT 56
AREA= 4.96 Acres
CN= 86
CATCHMENT 58
AREA= 0.62 Acres
CN= 87
Tc=0.38 hr
UNION AVENUE
LEGEND
Storm Sewer & Overflow Tributary
Storm Sewer Tributary Only
Overflow Tributary Only

GRAPHIC SCALE - FEET: 0 150 300

FLOOD PRONE AREAS STUDY MADISON ST. & JEFFERSON AVE. AREAS

Prepared For:
CITY OF WHEATON
303 W Wesley Street
Wheaton, IL 60187
630-260-2000

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WWW.WMA-LTD.COM

BY	REVISION DESCRIPTION	DATE	REV#

Section-Township-Range
DuPage: City of Wheaton - Milton Twp

JOB #: 44059	SURV: DS / BC
DRAWN: RLS	REVIEW: SMR
SCALE: 1"=150'	DATE: 06-15-2018

SHEET NAME
CATCHMENT AREAS EXHIBIT

SHEET #
X-3

DATE: 6/20/2018
FILE: E:\ACTIVE-PROJECTS\44059-173910-DuPage\ENGR\MRI\STORMWATER\Madison_Jefferson\Madison-JeffersonExhibits.dgn
MODEL: X-3

TOPOGRAPHIC SURVEY

SOURCE BENCHMARK

DU PAGE COUNTY BENCHMARK 0109 PID DK3278
STATION IS LOCATED ALONG THE NORTH SIDE OF LIBERTY DRIVE, NORTHEAST OF A "T" INTERSECTION WITH CARLTON AVENUE; STATION IS 43.5 FT. NORTH OF THE CENTERLINE OF LIBERTY DRIVE, 27.5 FT. EAST OF THE CENTERLINE OF CARLTON AVENUE, AND 6.0 FT. NORTH OF THE SOUTH END OF A RETAINING WALL. MONUMENT IS 0.6 FT. ABOVE ROAD SURFACE.
ELEVATION = 753.20 (NAVD-88)

SITE BENCHMARK

CUT CROSS ON THE SOUTH CURB OF MADISON STREET, MIDWAY BETWEEN GARY AVENUE AND GARY COURT, OPPOSITE HOUSE #505 W. MADISON.
ELEVATION = 741.28 (NAVD-88)

N
HARRISON AVENUE
MADISON STREET
JEFFERSON AVENUE
ELLIS AVENUE
GARY AVENUE
GARY COURT
WEST STREET
FES IS UNDERWATER; A PROBE MEASURED 2.35' FROM THE GROUND TO THE TOP OF THE PIPE. THE PIPE IS A 36 INCH RCP. TOP OF PIPE = 724.38 INVERT=722.05 +/-
RIM=729.64 INV 36"=722.09 (THE PIPE IS COMPLETELY UNDER WATER) INV 27"=724.04
RIM=735.69 INV W=723.79 INV NE=732.19 INV SE=724.29 INV NNE=723.90
SANITARY MH RIM=735.24 INV W=727.64 INV S=727.74 INV E=728.84
RIM=734.84 INV=(FULL OF WATER WATER LEVEL=732.74)
RIM=735.82 INV E=729.52 INV E(INLET)=731.32 INV S=730.22 INV W=724.12 INV SW=731.30
RIM=744.31 INV W=738.31 INV E=738.31 INV N=740.31 INV S=740.31 INV SE=740.31
SANITARY MH RIM=734.10 INV=727.30
RIM=734.88 INV=732.28
RIM=736.04 INV=733.54
RIM=735.77 INV=(FULL OF WATER WATER LEVEL=733.77)
RIM=735.21 INV S=732.33 INV N=(PIPE UNDER WATER; POSSIBLE INVERT OF 728.53)
SANITARY MH RIM=737.48
RIM=739.65 INV N=733.05 INV E=733.65
RIM=742.50 INV=740.10
SANITARY MH RIM=743.00 INV=735.20
RIM=742.74 INV=739.49
RIM=748.50 INV=741.20
RIM=754.84 INV=749.64
RIM=754.77 INV E=745.97 INV W=745.97 INV S=748.37 INV SE=749.47
SANITARY MH RIM=740.37 INV=731.07
RIM=739.79
RIM=739.24 INV N=732.44 INV S=734.04 INV E=732.74 INV SW=733.54 INV W=734.84
RIM=739.45 INV=736.15
SANITARY MH RIM=736.93 INV=731.83
RIM=740.00 INV=738.80
RIM=742.78 INV W=736.18 INV E=736.18 INV S=737.68 INV NE=739.28
SANITARY MH RIM=743.21 INV N=737.61 INV E=738.11
SITE BENCHMARK CUT CROSS IN CURB ELEV=741.28 (NAVD88)
RIM=755.43 INV=746.13
RIM=754.39 INV=751.54
RIM=760.87 INV=754.67
RIM=749.77 INV N=742.97 INV S=742.97
RIM=744.36 INV S=737.36 INV W=737.36 INV N=737.26
RIM=746.84 INV W=740.14 INV E=740.14
RIM=751.20 INV=743.20
36" RCP STM
27" RCP STM
12" RCP
24" RCP
15" PVC
8" VCP
8" PVC
18" STM
ASPHALT
CONCRETE
GARAGE
#822
#811
#810
#525
#526
#719
#718
#715

50 0 50 100
GRAPHIC SCALE - FEET

Rev	Date	Description	By

TOPOGRAPHIC SURVEY
MADISON ST & GARY AVE

LOCATION:
Madison Street & Gary Avenue Vicinity

PREPARED FOR:
CITY OF WHEATON

WEBSTER, MCGRATH & AHLBERG LTD.
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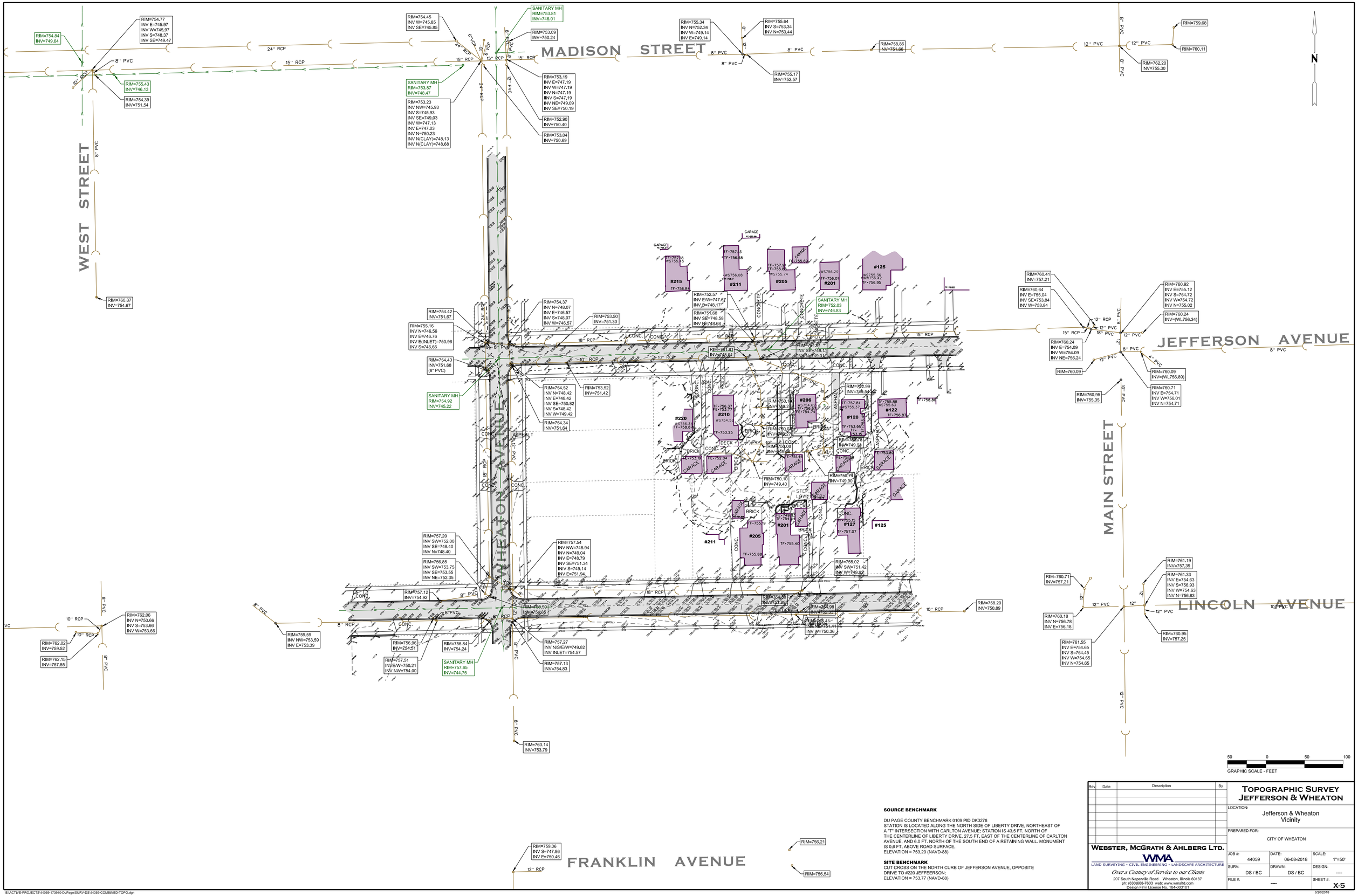
ph: (630)668-7603 web: www.wmaltd.com
Design Firm License No. 184-003101

JOB #:	DATE:	SCALE:
44059	06-08-2018	1"=50'
SURV: DS / BC	DRAWN: DS / BC	DESIGN: ----
FILE #: ----		SHEET #: X-4



SOURCE BENCHMARK

DU PAGE COUNTY BENCHMARK 0109 PID DK3278
STATION IS LOCATED ALONG THE NORTH SIDE OF LIBERTY DRIVE, NORTHEAST OF A "T" INTERSECTION WITH CARLTON AVENUE; STATION IS 43.5 FT. NORTH OF THE CENTERLINE OF LIBERTY DRIVE, 27.5 FT. EAST OF THE CENTERLINE OF CARLTON AVENUE, AND 6.0 FT. NORTH OF THE SOUTH END OF A RETAINING WALL, MONUMENT IS 0.6 FT. ABOVE ROAD SURFACE,
ELEVATION = 753.20 (NAVD-88)

SITE BENCHMARK

CUT CROSS ON THE NORTH CURB OF JEFFERSON AVENUE, OPPOSITE DRIVE TO #220 JEFFEERSON;
ELEVATION = 753.77 (NAVD-88)

Rev.	Date	Description	By

TOPOGRAPHIC SURVEY
JEFFERSON & WHEATON

LOCATION: Jefferson & Wheaton Vicinity

PREPARED FOR: CITY OF WHEATON

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Design Firm License No. 184-003101

JOB #:	DATE:	SCALE:
44059	06-08-2018	1"=50'
SURV: DS / BC	DRAWN: DS / BC	DESIGN: ---
FILE #: ---		SHEET #: X-5

6/20/2018

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