


**K-ESR-Z-00006, REV. 0**

**CONSTRUCTION PHASE SETTLEMENT MONITORING REPORT  
FOR  
SALTSTONE DISPOSAL UNIT 6 (SDU 6)**


**K-ESR-Z-00006**

**Construction Phase Settlement Monitoring Report  
For  
Saltstone Disposal Unit 6 (SDU 6)**


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## **1. Introduction**

The purpose of this report is to document the results of the settlement monitoring program from the construction phase of the Saltstone Disposal Unit 6 (SDU 6).

### **1.1 Background**

SDU 6 is a cylindrical tank approximately 375 feet in diameter and 43 feet tall with a volume of approximately 32-million gallons. The tank is constructed of cast-in-place concrete walls on a cast-in-place concrete slab. The concrete slab is underlain by a two-layer concrete mud mat (4-inch and 6-inch thick).

SDU 6 was constructed in a large excavation; overburden excavated for construction ranged from approximately 10 to 17 feet. SDU 6 was not backfilled following construction. The base of the excavation ranged from approximately 265 feet to 269 feet, msl. The floor of SDU 6 is sloped to facilitate future operations.

## **2. Data Collected**

The settlement survey markers used during construction of SDU 6 are described in the following sections. Table 1 summarizes the types and locations of the markers used at SDU 6. Figure 1 illustrates the locations of the markers described in the following sections.

Settlement surveys were performed by the subcontractor throughout construction until June 2015. In July 2105, SRR took responsibility for surveying. SRNS took over responsibility for settlement surveying beginning November 10, 2015, during the initial leak testing.

### **2.1 Heave markers**

Five borros anchor markers were installed across the footprint of the SDU6 to monitor rebound during the excavation process. The anchors were installed to a depth below the bottom of the excavation floor. The heave markers are designated with an "HM" prefix. Locations HM1 and HM5 were also instrumented with a metal pipe installed as an alternative to borros anchors. The pipe were installed the in the same manner as the borros anchors, except there were no prongs to extended. Construction activities for the tank did not begin until about one year following the completion of the excavation.

### **2.2 Settlement Markers**

A series of settlement markers were used throughout the different phases of construction. During construction, settlement readings were generally obtained weekly.

#### **2.2.1 Mud Mat Markers**

Mud mat markers were installed following the placement of the lower mud mat. The mud mat markers are designated with an "MM" prefix. The markers were installed in the subgrade adjacent to the concrete mud mats to monitor movements prior to the installation of other permanent settlement markers on the SDU. The mud mat markers were monitored through the construction of the SDU, prior to the first leak test.

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### **2.2.2 Footing Markers**

Settlement markers were installed on the footings of the interior columns. The foot markers are designated with a “BM” prefix (C-CY-Z-00005 & C-CY-Z-00007). The footing markers were installed during the placement of the concrete for the footings and were monitored during construction until the final wall panel was installed.

### **2.2.3 Curb Markers**

Settlement markers were installed on the exterior floor (“curb”) of the SDU 6 upon completion of the wire-wrapping and the application of the shotcrete to the exterior of the tank. The curb markers are designated with an “SM” prefix (C-CY-Z-00005 & C-CY-Z-00007). Initial baseline readings were taken on the curb markers approximately one week prior to the beginning of the initial leak test.

### **2.2.4 Roof Markers**

Settlement markers were installed on the roof of the SDU 6, above the curb markers and directly above the foot markers. The roof markers are designated with an “RM” prefix. The roof markers were installed during the placement of the concrete for the roof panels. The roof markers were installed throughout construction.

## **2.3 Settlement Marker Pairings**

Settlement markers (curb markers, roof markers, etc) were paired together to evaluate the movement of the subgrade and tank at various locations across the footprint of the tank. Potential differential movements of the tank top and the tank foundation could be observed using paired settlement markers.

Marker pairings were designated as either Interior Locations (IL#) or Perimeter Locations (PL#). Table 2 summarizes the marker pairings.

## **2.4 Loading**

Spatial estimates of the loading were made for each of the settlement pairing during construction. Table 3 through Table 5 summarize the incremental loads during construction. Table 6 summarizes the net loads during construction of the tank by location.

During the excavation process, the net load at the final subgrade elevation was approximated using topographic surveys taken at various times during the excavation. Table 3 summarizes the loading estimate during excavation.

During construction changes in the net pressure at the final subgrade elevation were based on the spatial placements of the upper and lower mud mats and the floor slabs. Concrete placement diagrams were provided with the settlement monitoring reports. Table 4 summarizes the estimated incremental loads during construction of the mud mats and the floor slab.

Load increases due the placement of the tank walls, columns, and roof slabs were not spatially considered, but rather uniformly distributed over the footprint of the tank. Incremental loads were based the reported cumulative weight of concrete placed. Spatial consideration of the wall,

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column, and roof loads was not deemed necessary due to lack of movement observed during their construction. Table 5 summarizes the estimated incremental loads during construction of the walls, columns, and the roof.

During leak testing of the SDU 6 tank, the increase in load was based on the measured volume of water pumped into the tank. At capacity, the 32 million gallons resulted in a net pressure increase of approximately 2,500 psf.

### **3. Results and Discussion**

Observed movements of the subgrade and tank are discussed in the following sections. The figures include movements and estimates of net subgrade pressure.

Survey data received for the heave markers may be found in document control under the contract number SRRA008515. Survey data received from the tank subcontractor (mud mat through hydro leak test) are found in document control under the contract number SRRA023445. Survey data received from site surveying (SRR and SRNS) are provided as an attachment to this document. Appendix B lists the files contained in the electronic attachment.

#### **3.1 Heave Data**

During excavation, approximately 8 to 14 feet of overburden were removed from the SDU 6 footprint. Table 7 summarizes the readings and movements of the heave markers; Figure 2 illustrates the measured movements during the excavation process. The measured heave ranged from 0.1 to 0.4 inches immediately following excavation in 2012. The excavation remained open for approximately one year prior to any further significant construction activities.

A final survey was taken of the heave markers in 2013; however the results showed all markers settled approximately ¼-inch, except for markers 5 and 5A which settled more than 2 inches. The results were unrealistic of an exposed excavation and are not illustrated in Figure 2.

#### **3.2 Settlement Markers**

Movements of the settlement markers are summarized in the following sections.

##### ***3.2.1 Mud Mat Markers***

Table 8 summarizes the readings and movements of the mud mat markers; Figure 3 illustrates the measured movements of the mud mat markers. The mud mat markers experienced only small movements during construction. The measured movements ranged generally between 0.1 inches and -0.1 inches throughout construction. One marker (MM7) experienced higher settlements, but this was likely due to the monument getting disturbed, as there was no significant load in the vicinity of MM7 at the time of measured movement (Table 4 and Table 8); otherwise the monument maintained a relatively constant elevation throughout construction.

##### ***3.2.2 Footing Markers***

Table 9 summarizes the readings and movements of the footing markers; Figure 4 illustrates the measured movements of the footing markers. The footing markers experienced only small movements during construction. The measured settlements for all markers were approximately

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0.1 inches at the final reading, except for two markers which were less than ¼- inch.

### **3.2.3 Curb Markers**

Table 10 summarizes the readings and movements of the curb markers; Figure 5 illustrates the movements of the curb markers since their installation. The response of the monuments due to the leak testing can be observed as settlement during loading and rebound during unloading. Figure 6 illustrates in greater detail the response of the tank during the initial leak testing. Although the reported movements differ, the relative movements of the curb markers are consistent with one another. Seven of the ten curb markers showed approximately ¼-inch of upward movement relative to their installation elevation, potentially due to differences in baselining between the two different survey groups during the leak test. During the initial leak testing, the tank settled approximately 0.2 to 0.35 inches.

### **3.2.4 Roof Markers**

Table 11 and Table 12 summarize the readings and movements of the roof markers. Figure 7 and Figure 8 illustrate the movements of the interior and perimeter roof markers, respectively, since their installation. Figure 9 and Figure 10 illustrate in greater detail the response of the tank during the initial leak testing. During the initial leak testing, the interior and perimeter roof markers settled approximately 0.1 to 0.3 inches. The rebound of the interior roof markers was approximately ½-inch, while the rebound of the perimeter markers was approximately ¼-inch. As with the curb markers, several of the roof markers indicated a net heave following the leak testing, which could likely be attributed to differences in baselining between the various survey groups.

Roof markers RM5 and RM7 are located beneath a pipe bridge and survey has been unable to access these points during the final few surveys.

## **3.3 Settlement Marker Pairings**

Graphs illustrating the movements of the paired settlement markers are provided in Appendix A. The graphs illustrate the monument movements and the net loading at the tank subgrade level. Also provided are graphs of the paired movements during the leak testing. An estimate of predicted movements (0.2 to 0.8 inches) under an estimated 3,300 psf gross load at the foundation level is provided in the figures. The estimate is based on the Schmertmann approach outlined in the SDU 6 final geotechnical evaluation report (Ref. SRS 2012). All of the settlements in Appendix A are less than the Average predicted settlements, many are less than the minimum predicted settlements. Settlements less than predicted could be due conservative estimates of settlement or possibly due to incomplete consolidation of the soil column, due to the relatively short duration of the hydro tests.

## **4. Conclusions**

The settlement surveys did not indicate any significant movements or differential settlements of the structure during construction or during the leak testing. It is recommended that settlement surveys be continued during the operation of the SDU.

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No significant differences were observed in the relative moments of the roof and curb markers during construction or leak testing.

The use of a metal pipe as an alternative to borros anchors for heave monitoring did not provide any significant results. The continued use of borros anchors for future excavations is recommended.

During construction, the frequency of the settlement readings could be reduced, at the discretion of the geotechnical engineer, particularly when the net contact pressures at the subgrade at less than zero. During construction phases where significant loads are added (or removed) weekly monitoring appears to be sufficient.

## **5. References**

1. SRS 2012, K-ESR-Z-00005, Rev. 0, Saltstone Disposal Unit 6 Geotechnical Investigation Report, April 2012.
  2. SRS 2013, C-CY-Z-00005, Rev. 1, Z Area Saltstone Disposal Site SDU6 Tank Design HDPE/GCL, Leakage Detection and Settlement Monitoring Plan, November 2013.
  3. SRS 2017, C-CY-Z-00007, Rev. 4, Z Area Saltstone Disposal Site SDU6 Tank Design Civil Leakage Detection and Settlement Monitoring Sections and Details, February 2017.
  4. SRR Subcontract SRRA008515, Titles and Dates vary.
  5. SRR Subcontract SRRA023445, Titles and Dates vary.
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**Tables**

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**Table 1: Summary of Survey Monuments**

Location	Heave	Mud Mat	Interior Column	Curb	Roof
IL1	HM1		BM1		RM1
IL2	HM1A		BM2		RM2
IL3	HM2		BM3		RM3
IL4	HM3		BM4		RM4
IL5			BM5		RM5
IL6			BM6		RM6
IL7			BM7		RM7
IL8			BM8		RM8
IL9			BM9		RM9

**Table 2: Summary of Settlement Marker Pairings**

Location	Heave	Mud Mat	Interior Column	Curb	Roof
IL1	HM1		BM1		RM1
IL2			BM2		RM2
IL3			BM3		RM3
IL4			BM4		RM4
IL5			BM5		RM5
IL6			BM6		RM6
IL7			BM7		RM7
IL8			BM8		RM8
IL9			BM9		RM9
PL1	HM3	MM1		SM1	RM10
PL2		MM2		SM2	RM11
PL3	HM4	MM3		SM3	RM12
PL4		MM4		SM4	RM13
PL5	HM5	MM5		SM5	RM14
PL6		MM6		SM6	RM15
PL7		MM7		SM7	RM16
PL8	HM2	MM8		SM8	RM17
PL9		MM9		SM9	RM18
PL10		MM10		SM10	RM19

**Table 3: Ground Elevations during Excavation and Estimated Net Pressures**

Construction Phase	Date	Days Since 9/6/12	Interior Settlement Locations									Perimeter Settlement Locations										
			IL1	IL2	IL3	IL4	IL5	IL6	IL7	IL8	IL9	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8	PL9	PL10	
EXC	9/6/2012	0	276.5	277.5	278.5	278.5	277.5	277.0	277.0	276.5	277.5	275.8	279.0	280.4	279.5	278.3	277.5	276.5	275.7	275.0	274.5	
EXC	9/19/2012	13	276.5	277.5	278.5	278.5	277.5	277.0	277.0	276.5	276.3	274.7	279.0	279.7	279.5	277.4	277.5	276.5	275.1	275.0	274.5	
EXC	9/21/2012	15	276.5	277.5	278.5	278.5	277.5	277.0	277.0	276.5	275.9	274.7	279.0	279.4	279.5	277.4	277.5	276.5	274.6	275.0	274.5	
EXC	9/27/2012	21	276.5	277.5	278.5	278.5	277.5	277.0	277.0	276.5	275.9	274.7	279.0	279.4	270.7	270.7	270.7	274.6	274.6	275.0	274.5	
EXC	10/4/2012	28	276.5	277.5	278.5	278.5	277.5	277.0	277.0	276.5	275.9	274.2	279.0	270.0	270.3	270.7	270.7	274.6	274.6	275.0	274.5	
EXC	10/9/2012	33	276.5	277.5	270.1	270.2	270.4	270.3	270.2	276.5	270.1	274.2	279.0	270.0	270.3	270.7	270.5	270.5	270.4	275.0	274.5	
EXC	10/15/2012	39	272.2	271.1	270.1	270.2	270.4	270.3	270.2	271.2	270.1	274.2	272.1	270.0	270.3	270.7	270.5	270.5	270.4	272.3	272.3	
EXC	10/15/2012	39	270.0	270.0	270.1	270.2	270.4	270.3	270.2	270.1	270.1	269.9	270.0	270.0	270.3	270.7	270.5	270.5	270.4	270.2	270.2	
EXC	10/30/2012	54	267.7	267.7	267.7	267.6	267.6	267.6	267.6	267.7	269.1	266.3	266.3	266.3	266.2	266.2	266.2	266.2	266.2	266.3	266.3	
EXC	10/30/2012	54	267.7	267.7	267.7	267.6	267.6	267.6	267.6	267.7	269.1	266.3	266.3	266.3	266.2	266.2	266.2	266.2	266.2	266.3	266.3	
			Interior Settlement Locations Estimated Incremental Loads (psf)									Interior Settlement Locations Estimated Incremental Loads (psf)										
EXC	9/6/2012	0	0	0	0	0	0	0	0	0	0	-144	-124	0	-79	0	-103	0	0	-72	0	0
EXC	9/19/2012	13	0	0	0	0	0	0	0	0	0	-42	-2	0	-42	0	-5	0	0	-61	0	0
EXC	9/21/2012	15	0	0	0	0	0	0	0	0	0	0	0	0	-1062	-804	-822	-224	0	0	0	0
EXC	9/27/2012	21	0	0	0	0	0	0	0	0	0	-60	0	-1123	-39	0	0	0	0	0	0	0
EXC	10/4/2012	28	0	0	-1013	-994	-854	-803	-811	0	-696	0	0	0	0	0	-17	-494	-511	0	0	
EXC	10/9/2012	33	-521	-767	0	0	0	0	0	-636	0	0	-827	0	0	0	0	0	0	-325	-265	
EXC	10/15/2012	39	-256	-128	0	0	0	0	0	-128	0	-512	-256	0	0	0	0	0	0	-256	-256	
EXC	10/15/2012	39	-283	-284	-285	-309	-332	-322	-312	-297	-126	-439	-442	-444	-491	-539	-518	-518	-498	-469	-469	
EXC	10/30/2012	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EXC	10/30/2012	54	0	0	0	0	0	0	0	0	0	-144	-124	0	-79	0	-103	0	0	-72	0	0

**Table 4: Estimated Incremental Loads during Mud Mat and Floor Slab Concrete Placements**

Construction Phase	Date	Days Since 9/6/12	Interior Settlement Locations Estimated Incremental Load (psf)									Perimeter Settlement Locations Estimated Incremental Load (psf)									
			IL1	IL2	IL3	IL4	IL5	IL6	IL7	IL8	IL9	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8	PL9	PL10
LMM	12/20/2013	470				50	50								50	50					
LMM	1/16/2014	497						50								50	50				
LMM	1/23/2014	504	50		50							50	50	50							
LMM	2/7/2014	519		50						50	50									50	50
UMM	3/13/2014	553									75										
UMM	3/15/2014	555	75									75									75
UMM	3/22/2014	562		75									75								
UMM	3/25/2014	565			75	75								75	75						
UMM	3/26/2014	566								75									75	75	
UMM	3/27/2014	567					75								75	75					
LMM	3/28/2014	568							50												
UMM	4/10/2014	581						75	75												
LMM	4/11/2014	582																		50	
UMM	4/17/2014	588																75			
Floor	6/2/2014	634		150							150										
Floor	6/12/2014	644												150							150
Floor	6/30/2014	662													150						
Floor	7/2/2014	664							150	150											
Floor	7/15/2014	677	150									150									
Floor	7/23/2014	685			150									150							
Floor	7/29/2014	691																	150		
Floor	8/11/2014	704					150								150						
Floor	9/4/2014	728				150									150						
Floor	9/29/2014	753						150								150	150				

The installation date for the final floor slabs are estimated (9/4 and 9/29).

**Table 5: Estimated Incremental Loads during Construction of the Walls, Columns, and Roof**

Construction Phase	Date	Days Since 9/6/12	% Load	Estimated Concrete Weight (lbs)	Final Concrete Weight (lbs)	Estimated Final Pressure (psf)	Incremental Pressure from prior reading (psf)
WCR	9/30/2014	754	56.2	37381000		602	63
WCR	10/8/2014	762	57.3	38113500		602	7
WCR	10/17/2014	771	58.5	38960700		603	7
WCR	10/23/2014	777	59.5	39603734		603	6
WCR	10/30/2014	784	59.8	39793932		603	2
WCR	11/6/2014	791	61.1	40644398		602	8
WCR	11/11/2014	796	61.1	40644398		602	0
WCR	11/20/2014	805	62.3	41452182		602	7
WCR	11/24/2014	809	62.9	41882777		603	4
WCR	12/5/2014	820	63.9	42540264		603	6
WCR	12/9/2014	824	63.9	42540264		603	0
WCR	12/15/2014	830	63.9	42540266		603	0
WCR	12/29/2014	844	65.4	43524678		603	9
WCR	1/6/2015	852	65.7	43754251		603	2
WCR	1/13/2015	859	65.7	43754251		603	0
WCR	1/20/2015	866	67.3	44813682		603	10
WCR	1/27/2015	873	70.0	46608161		603	16
WCR	2/5/2015	882	70.1	46669773		603	1
WCR	2/12/2015	889	73.3	48797067		603	19
WCR	2/17/2015	894	74	49227662		602	4
WCR	2/26/2015	903	74.3	49459916		603	2
WCR	3/3/2015	908	74.3	49459916		603	0
WCR	3/9/2015	914	80.5	53606500		603	37
WCR	4/2/2015	938	81.5	54260343		603	6
WCR	4/6/2015	942	81.9	54545640		603	2
WCR	4/16/2015	952	83.9	55854300		603	12
WCR	4/21/2015	957	86.4	57551000		603	15
WCR	5/19/2015	985	94.9	63149915		602	51
WCR	5/27/2015	993	94.9	63149915		602	0
WCR	6/2/2015	999	97.4	64846615		603	15
WCR	6/9/2015	1006	100	66543313		602	16
WCR	6/19/2015	1016	100	66543313	66543313	602	0

Based on the limited movements observed and relatively low net pressures, a detailed loading schedule for the walls, columns and roof is not utilized.

The loads are based on a percentage of the total load. The initial 9/30/2014 63 psf load is estimated based on the total concrete poured to date, less the pressure of the mud mats and floor slab.

**Table 6: Summary of Subgrade Pressures by Location**

Construction Phase	Date	Days Since 9/6/12	Interior Settlement Locations – Estimated Net Load (psf)									Perimeter Settlement Locations – Estimated Net Load (psf)									
			IL1	IL2	IL3	IL4	IL5	IL6	IL7	IL8	IL9	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8	PL9	PL10
EXC	9/6/2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXC	9/19/2012	13	0	0	0	0	0	0	0	0	-144	-124	0	-79	0	-103	0	0	-72	0	0
EXC	9/21/2012	15	0	0	0	0	0	0	0	0	-186	-126	0	-121	0	-108	0	0	-133	0	0
EXC	9/27/2012	21	0	0	0	0	0	0	0	0	-186	-126	0	-121	-1062	-912	-822	-224	-133	0	0
EXC	10/4/2012	28	0	0	0	0	0	0	0	0	-186	-186	0	-1244	-1101	-912	-822	-224	-133	0	0
EXC	10/9/2012	33	0	0	-1013	-994	-854	-803	-811	0	-882	-186	0	-1244	-1101	-912	-839	-719	-644	0	0
EXC	10/15/2012	39	-521	-767	-1013	-994	-854	-803	-811	-636	-882	-186	-827	-1244	-1101	-912	-839	-719	-644	-325	-265
EXC	10/15/2012	39	-777	-895	-1013	-994	-854	-803	-811	-764	-882	-698	-1084	-1244	-1101	-912	-839	-719	-644	-581	-521
EXC	10/30/2012	54	-1060	-1179	-1298	-1303	-1187	-1125	-1123	-1061	-1008	-1138	-1525	-1688	-1592	-1451	-1357	-1237	-1142	-1050	-990
EXC	10/30/2012	54	-1060	-1179	-1298	-1303	-1187	-1125	-1123	-1061	-1008	-1138	-1525	-1688	-1592	-1451	-1357	-1237	-1142	-1050	-990
LMM	12/20/2013	470	-1060	-1179	-1298	-1253	-1137	-1125	-1123	-1061	-1008	-1138	-1525	-1688	-1542	-1401	-1357	-1237	-1142	-1050	-990
LMM	1/16/2014	497	-1060	-1179	-1298	-1253	-1137	-1075	-1123	-1061	-1008	-1138	-1525	-1688	-1542	-1401	-1307	-1187	-1142	-1050	-990
LMM	1/23/2014	504	-1010	-1179	-1248	-1253	-1137	-1075	-1123	-1061	-1008	-1088	-1475	-1638	-1542	-1401	-1307	-1187	-1142	-1050	-990
LMM	2/7/2014	519	-1010	-1129	-1248	-1253	-1137	-1075	-1123	-1011	-958	-1088	-1475	-1638	-1542	-1401	-1307	-1187	-1142	-1000	-940
UMM	3/13/2014	553	-1010	-1129	-1248	-1253	-1137	-1075	-1123	-1011	-883	-1088	-1475	-1638	-1542	-1401	-1307	-1187	-1142	-1000	-940
UMM	3/15/2014	555	-935	-1129	-1248	-1253	-1137	-1075	-1123	-1011	-883	-1013	-1475	-1638	-1542	-1401	-1307	-1187	-1142	-1000	-865
UMM	3/22/2014	562	-935	-1054	-1248	-1253	-1137	-1075	-1123	-1011	-883	-1013	-1400	-1638	-1542	-1401	-1307	-1187	-1142	-1000	-865
UMM	3/25/2014	565	-935	-1054	-1173	-1178	-1137	-1075	-1123	-1011	-883	-1013	-1400	-1563	-1467	-1401	-1307	-1187	-1142	-1000	-865
UMM	3/26/2014	566	-935	-1054	-1173	-1178	-1137	-1075	-1123	-936	-883	-1013	-1400	-1563	-1467	-1401	-1307	-1187	-1067	-925	-865
UMM	3/27/2014	567	-935	-1054	-1173	-1178	-1062	-1075	-1123	-936	-883	-1013	-1400	-1563	-1467	-1326	-1232	-1187	-1067	-925	-865
LMM	3/28/2014	568	-935	-1054	-1173	-1178	-1062	-1075	-1073	-936	-883	-1013	-1400	-1563	-1467	-1326	-1232	-1187	-1067	-925	-865
UMM	4/10/2014	581	-935	-1054	-1173	-1178	-1062	-1000	-998	-936	-883	-1013	-1400	-1563	-1467	-1326	-1232	-1187	-1067	-925	-865
LMM	4/11/2014	582	-935	-1054	-1173	-1178	-1062	-1000	-998	-936	-883	-1013	-1400	-1563	-1467	-1326	-1232	-1187	-1017	-925	-865
UMM	4/17/2014	588	-935	-1054	-1173	-1178	-1062	-1000	-998	-936	-883	-1013	-1400	-1563	-1467	-1326	-1232	-1112	-1017	-925	-865
Floor	6/2/2014	634	-935	-904	-1173	-1178	-1062	-1000	-998	-936	-733	-1013	-1400	-1563	-1467	-1326	-1232	-1112	-1017	-925	-865
Floor	6/12/2014	644	-935	-904	-1173	-1178	-1062	-1000	-998	-936	-733	-1013	-1400	-1563	-1467	-1326	-1232	-1112	-1017	-775	-715
Floor	6/30/2014	662	-935	-904	-1173	-1178	-1062	-1000	-998	-936	-733	-1013	-1250	-1563	-1467	-1326	-1232	-1112	-1017	-775	-715
Floor	7/2/2014	664	-935	-904	-1173	-1178	-1062	-1000	-848	-786	-733	-1013	-1250	-1563	-1467	-1326	-1232	-1112	-1017	-775	-715
Floor	7/15/2014	677	-785	-904	-1173	-1178	-1062	-1000	-848	-786	-733	-863	-1250	-1563	-1467	-1326	-1232	-1112	-1017	-775	-715
Floor	7/23/2014	685	-785	-904	-1023	-1178	-1062	-1000	-848	-786	-733	-863	-1250	-1413	-1467	-1326	-1232	-1112	-1017	-775	-715
Floor	7/29/2014	691	-785	-904	-1023	-1178	-1062	-1000	-848	-786	-733	-863	-1250	-1413	-1467	-1326	-1232	-1112	-867	-775	-715
Floor	8/11/2014	704	-785	-904	-1023	-1178	-912	-1000	-848	-786	-733	-863	-1250	-1413	-1467	-1176	-1232	-1112	-867	-775	-715
Floor	9/4/2014	728	-785	-904	-1023	-1028	-912	-1000	-848	-786	-733	-863	-1250	-1413	-1317	-1176	-1232	-1112	-867	-775	-715
Floor	9/29/2014	753	-785	-904	-1023	-1028	-912	-850	-848	-786	-733	-863	-1250	-1413	-1317	-1176	-1082	-962	-867	-775	-715
WCR	9/30/2014	754	-721	-841	-960	-964	-848	-787	-785	-723	-670	-799	-1187	-1350	-1254	-1112	-1019	-899	-804	-712	-652
WCR	10/8/2014	762	-715	-834	-953	-958	-842	-780	-778	-716	-663	-793	-1180	-1343	-1247	-1106	-1012	-892	-797	-705	-645
WCR	10/17/2014	771	-707	-827	-946	-950	-834	-773	-771	-709	-656	-785	-1173	-1336	-1240	-1098	-1005	-885	-790	-698	-638
WCR	10/23/2014	777	-701	-821	-940	-944	-828	-767	-765	-703	-650	-779	-1167	-1330	-1234	-1092	-999	-879	-784	-692	-632
WCR	10/30/2014	784	-699	-819	-938	-942	-827	-765	-763	-701	-648	-777	-1165	-1328	-1232	-1091	-997	-877	-782	-690	-630
WCR	11/6/2014	791	-692	-811	-930	-935	-819	-757	-755	-693	-640	-770	-1157	-1320	-1224	-1083	-989	-869	-774	-682	-622
WCR	11/11/2014	796	-692	-811	-930	-935	-819	-757	-755	-693	-640	-770	-1157	-1320	-1224	-1083	-989	-869	-774	-682	-622
WCR	11/20/2014	805	-684	-804	-923	-927	-812	-750	-748	-686	-633	-762	-1150	-1313	-1217	-1076	-982	-862	-767	-675	-615
WCR	11/24/2014	809	-681	-800	-920	-924	-808	-746	-744	-683	-629	-759	-1146	-1310	-1214	-1072	-978	-858	-764	-671	-611
WCR	12/5/2014	820	-675	-794	-914	-918	-802	-740	-738	-677	-623	-753	-1140	-1304	-1208	-1066	-972	-852	-758	-665	-605
WCR	12/9/2014	824	-675	-794	-914	-918	-802	-740	-738	-677	-623	-753	-1140	-1304	-1208	-1066	-972	-852	-758	-665	-605

Construction Phase	Date	Days Since 9/6/12	Interior Settlement Locations – Estimated Net Load (psf)									Perimeter Settlement Locations – Estimated Net Load (psf)									
			IL1	IL2	IL3	IL4	IL5	IL6	IL7	IL8	IL9	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8	PL9	PL10
<b>Table 6: Summary of Subgrade Pressures by Location (continued)</b>																					
WCR	12/15/2014	830	-675	-794	-914	-918	-802	-740	-738	-677	-623	-753	-1140	-1304	-1208	-1066	-972	-852	-758	-665	-605
WCR	12/29/2014	844	-666	-785	-905	-909	-793	-731	-729	-668	-614	-744	-1131	-1295	-1199	-1057	-963	-843	-749	-656	-596
WCR	1/6/2015	852	-664	-783	-903	-907	-791	-729	-728	-666	-612	-742	-1130	-1293	-1197	-1055	-962	-842	-747	-654	-594
WCR	1/13/2015	859	-664	-783	-903	-907	-791	-729	-728	-666	-612	-742	-1130	-1293	-1197	-1055	-962	-842	-747	-654	-594
WCR	1/20/2015	866	-654	-774	-893	-897	-781	-720	-718	-656	-603	-732	-1120	-1283	-1187	-1045	-952	-832	-737	-645	-585
WCR	1/27/2015	873	-638	-757	-877	-881	-765	-703	-702	-640	-586	-716	-1104	-1267	-1171	-1029	-936	-816	-721	-628	-568
WCR	2/5/2015	882	-637	-757	-876	-880	-765	-703	-701	-639	-586	-715	-1103	-1266	-1170	-1029	-935	-815	-720	-628	-568
WCR	2/12/2015	889	-618	-737	-857	-861	-745	-683	-682	-620	-566	-696	-1084	-1247	-1151	-1009	-916	-796	-701	-608	-548
WCR	2/17/2015	894	-614	-733	-853	-857	-741	-679	-677	-616	-562	-692	-1079	-1243	-1147	-1005	-911	-791	-697	-604	-544
WCR	2/26/2015	903	-612	-731	-851	-855	-739	-677	-676	-614	-560	-690	-1078	-1241	-1145	-1003	-910	-790	-695	-602	-542
WCR	3/3/2015	908	-612	-731	-851	-855	-739	-677	-676	-614	-560	-690	-1078	-1241	-1145	-1003	-910	-790	-695	-602	-542
WCR	3/9/2015	914	-575	-694	-813	-818	-702	-640	-638	-576	-523	-653	-1040	-1203	-1107	-966	-872	-752	-657	-565	-505
WCR	4/2/2015	938	-569	-688	-807	-812	-696	-634	-632	-570	-517	-647	-1034	-1197	-1101	-960	-866	-746	-651	-559	-499
WCR	4/6/2015	942	-566	-686	-805	-809	-693	-632	-630	-568	-515	-644	-1032	-1195	-1099	-957	-864	-744	-649	-557	-497
WCR	4/16/2015	952	-554	-674	-793	-797	-681	-620	-618	-556	-503	-632	-1020	-1183	-1087	-945	-852	-732	-637	-545	-485
WCR	4/21/2015	957	-539	-659	-778	-782	-666	-605	-603	-541	-488	-617	-1005	-1168	-1072	-930	-837	-717	-622	-530	-470
WCR	5/19/2015	985	-488	-607	-727	-731	-615	-553	-551	-490	-436	-566	-953	-1117	-1021	-879	-785	-665	-571	-478	-418
WCR	5/27/2015	993	-488	-607	-727	-731	-615	-553	-551	-490	-436	-566	-953	-1117	-1021	-879	-785	-665	-571	-478	-418
WCR	6/2/2015	999	-473	-592	-712	-716	-600	-538	-536	-475	-421	-551	-938	-1102	-1006	-864	-770	-650	-556	-463	-403
WCR	6/9/2015	1006	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388
WCR	6/19/2015	1016	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388
Hydro	10/12/2015	1131	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388
Hydro	10/13/2015	1132	-315	-435	-554	-558	-443	-381	-379	-317	-264	-393	-781	-944	-848	-707	-613	-493	-398	-306	-246
Hydro	10/14/2015	1133	-190	-309	-428	-433	-317	-255	-253	-191	-138	-268	-655	-818	-722	-581	-487	-367	-272	-180	-120
Hydro	10/15/2015	1134	-71	-190	-309	-314	-198	-136	-134	-72	-19	-149	-536	-699	-603	-462	-368	-248	-153	-61	-1
Hydro	10/18/2015	1137	255	136	16	12	128	190	192	253	307	177	-210	-374	-278	-136	-42	78	172	265	325
Hydro	10/19/2015	1138	385	266	146	142	258	320	321	383	437	307	-81	-244	-148	-6	87	207	302	395	455
Hydro	10/20/2015	1139	506	386	267	263	378	440	442	504	557	428	40	-123	-27	114	208	328	423	515	575
Hydro	10/21/2015	1140	626	507	387	383	499	561	563	624	678	548	161	-3	93	235	329	449	543	636	696
Hydro	10/22/2015	1141	748	629	510	505	621	683	685	747	800	670	283	120	216	357	451	571	666	758	818
Hydro	10/25/2015	1144	1089	970	850	846	962	1024	1025	1087	1141	1011	623	460	556	698	791	911	1006	1099	1159
Hydro	10/26/2015	1145	1205	1086	966	962	1078	1140	1142	1203	1257	1127	740	576	672	814	908	1028	1122	1215	1275
Hydro	10/27/2015	1146	1323	1204	1084	1080	1196	1258	1259	1321	1375	1245	857	694	790	932	1025	1145	1240	1333	1393
Hydro	10/28/2015	1147	1421	1302	1183	1178	1294	1356	1358	1420	1473	1343	956	793	889	1030	1124	1244	1339	1431	1491
Hydro	10/29/2015	1148	1521	1401	1282	1278	1394	1455	1457	1519	1572	1443	1055	892	988	1130	1223	1343	1438	1530	1590
Hydro	11/1/2015	1151	1797	1678	1559	1554	1670	1732	1734	1796	1849	1719	1332	1169	1265	1406	1500	1620	1715	1807	1867
Hydro	11/2/2015	1152	1886	1767	1647	1643	1759	1821	1822	1884	1938	1808	1420	1257	1353	1495	1588	1708	1803	1896	1956
Hydro	11/3/2015	1153	1950	1831	1711	1707	1823	1885	1887	1948	2002	1872	1485	1321	1417	1559	1653	1773	1867	1960	2020
Hydro	11/10/2015	1160	1950	1831	1711	1707	1823	1885	1887	1948	2002	1872	1485	1321	1417	1559	1653	1773	1867	1960	2020
Hydro	11/16/2015	1166	747	627	508	504	619	681	683	745	798	669	281	118	214	355	449	569	664	756	816
Hydro	11/23/2015	1173	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388
Hydro	11/30/2015	1180	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388
Hydro	12/7/2015	1187	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388
Hydro	12/15/2015	1195	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388

Construction Phase	Date	Days Since 9/6/12	Interior Settlement Locations – Estimated Net Load (psf)									Perimeter Settlement Locations – Estimated Net Load (psf)									
			IL1	IL2	IL3	IL4	IL5	IL6	IL7	IL8	IL9	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8	PL9	PL10
<b>Table 6: Summary of Subgrade Pressures by Location (continued)</b>																					
Hydro	1/14/2016	1225	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388
Hydro	1/18/2016	1229	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388
Hydro	12/15/2016	1561	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388
Hydro	12/27/2016	1573	1950	1831	1711	1707	1823	1885	1887	1948	2002	1872	1485	1321	1417	1559	1653	1773	1867	1960	2020
Hydro	12/31/2016	1577	1950	1831	1711	1707	1823	1885	1887	1948	2002	1872	1485	1321	1417	1559	1653	1773	1867	1960	2020
Hydro	1/21/2017	1598	-457	-577	-696	-700	-584	-523	-521	-459	-406	-535	-923	-1086	-990	-848	-755	-635	-540	-448	-388

**Construction Phase Explanation**

EXC Excavation

LMM Lower Mud Mat

UMM Upper Mud Mat

WCR Walls, Columns, and Roof

Floor SDU Floor Slab

Hydro Hydrostatic Leak Testing



**Table 7: Summary of Heave Marker Readings and Movements**

Date	Days Since 9/6/12	Top of Marker Elevations (ft, msl)							Top of Marker after Cut (ft, msl)							Cumulative Movement (inches)							
		HM1	HM1A	HM2	HM3	HM4	HM5	HM5A	HM1	HM1A	HM2	HM3	HM4	HM5	HM5A	HM1	HM1A	HM2	HM3	HM4	HM5	HM5A	
9/6/2012	0	278.58	278.6	276.96	276.79	282.2	279.86	279.82	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut								
9/19/2012	13	278.59	278.61	276.97	276.8	282.21	279.86	279.82	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	0.12	0.12	0.12	0.12	0.12	0.00	0.00	
9/21/2012	15	278.59	278.61	276.97	276.8	282.21	279.86	279.82	276.73	276.68	275.30	274.78	280.01	277.75	277.63	0.12	0.12	0.12	0.12	0.12	0.00	0.00	
9/27/2012	21	276.74	276.69	275.31	274.78	280.01	277.76	277.64	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	0.24	0.24	0.24	0.12	0.12	0.12	0.12	
9/27/2012	21	276.74	276.69	275.31	274.78	280.01	277.76	277.64	No Cut	No Cut	No Cut	No Cut	No Cut	271.01	271.25	0.24	0.24	0.24	0.12	0.12	0.12	0.12	
10/4/2012	28	276.74	276.69	275.3	274.77	280.02	271.03	271.26	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	0.24	0.24	0.12	0.00	0.24	0.36	0.24	
10/9/2012	33	276.74	276.69	275.3	274.77	280.02	271.02	271.26	270.53	270.55	270.74	No Cut	270.07	No Cut	No Cut	0.24	0.24	0.12	0.00	0.24	0.24	0.24	
10/15/2012	39	270.53	270.56	270.74	274.78	270.07	271.02	271.255	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	0.24	0.36	0.12	0.12	0.24	0.24	0.18	
10/15/2012	39	270.53	270.56	270.74	274.78	270.07	271.02	271.255	No Cut	No Cut	No Cut	270.98	No Cut	No Cut	No Cut	0.24	0.36	0.12	0.12	0.24	0.24	0.18	
10/30/2012	54	270.53	270.56	270.75	270.98	270.08	271.03	271.27	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	0.24	0.36	0.24	0.12	0.36	0.36	0.36	
10/30/2012	54	270.53	270.56	270.75	270.98	270.08	271.03	271.27	No Cut	No Cut	267.39	267.44	267.51	267.56	267.41	0.24	0.36	0.24	0.12	0.36	0.36	0.36	
10/24/2013	413	270.51	270.53	267.36	267.41	267.49	267.37	267.22	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	No Cut	0.00	0.00	-0.12	-0.24	0.12	-1.92	-1.92	

**Table 8: Mud Mat Marker Readings and Movements**

Date	Days Since 9/4/2014	Days Since 9/6/2012	Survey Measurement (ft, msl)										Cumulative Movement Since Installation (inches)									
			MM1	MM2	MM3	MM4	MM5	MM6	MM7	MM8	MM9	MM10	MM1	MM2	MM3	MM4	MM5	MM6	MM7	MM8	MM9	MM10
3/14/2014	0	554	265.310	265.340	265.420	265.370	265.420	265.440		265.350	265.500	265.430	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/18/2014	4	558	265.300	265.340	265.420	265.370	265.420	265.440		265.350	265.500	265.430	-0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/26/2014	12	566	265.300	265.340	265.410	265.350	265.420	265.440		265.360	265.510	265.440	-0.12	0.00	-0.12	-0.24	0.00	0.00		0.12	0.12	0.12
4/1/2014	18	572	265.290	265.330	265.410	265.370	265.420	265.440		265.350	265.500	265.430	-0.24	-0.12	-0.12	0.00	0.00	0.00		0.00	0.00	0.00
4/10/2014	27	581	265.270	265.310	265.400	265.360	265.410	265.430		265.320	265.460	265.400	-0.48	-0.36	-0.24	-0.12	-0.12	-0.12		-0.36	-0.48	-0.36
4/15/2014	32	586	265.290	265.330	265.420	265.370	265.430	265.440					-0.24	-0.12	0.00	0.00	0.12	0.00				
4/21/2014	38	592	265.300	265.330	265.420	265.380	265.430	265.450	265.430	265.360	265.500	265.440	-0.12	-0.12	0.00	0.12	0.12	0.12	0.00	0.12	0.00	0.12
5/1/2014	48	602	265.310	265.330	265.430	265.380	265.430	265.450	265.420	265.360	265.500	265.440	0.00	-0.12	0.12	0.12	0.12	0.12	-0.12	0.12	0.00	0.12
5/8/2014	55	609	265.290	265.320	265.410	265.370	265.430	265.440	265.410	265.360	265.500	265.440	-0.24	-0.24	-0.12	0.00	0.12	0.00	-0.24	0.12	0.00	0.12
5/13/2014	60	614	265.290	265.330	265.420	265.370	265.430	265.450	265.420	265.360	265.500	265.440	-0.24	-0.12	0.00	0.00	0.12	0.12	-0.12	0.12	0.00	0.12
5/19/2014	66	620	265.290	265.330	265.420	265.380	265.430	265.460	265.420	265.370	265.500	265.450	-0.24	-0.12	0.00	0.12	0.12	0.24	-0.12	0.24	0.00	0.24
5/27/2014	74	628	265.300	265.330	265.420	265.380	265.430	265.440	265.410	265.350	265.500	265.450	-0.12	-0.12	0.00	0.12	0.12	0.00	-0.24	0.00	0.00	0.24
6/4/2014	82	636	265.310	265.330	265.430	265.380	265.430	265.460	265.420	265.360	265.500	265.450	0.00	-0.12	0.12	0.12	0.12	0.24	-0.12	0.12	0.00	0.24
6/11/2014	89	643	265.300	265.330	265.420	265.380	265.430	265.450	265.420	265.350	265.500	265.430	-0.12	-0.12	0.00	0.12	0.12	0.12	-0.12	0.00	0.00	0.00
6/18/2014	96	650	265.300	265.330	265.430	265.380	265.420	265.450	265.420	265.350	265.500	265.440	-0.12	-0.12	0.12	0.12	0.00	0.12	-0.12	0.00	0.00	0.12
6/24/2014	102	656	265.300	265.330	265.420	265.380	265.420	265.450	265.420	265.350	265.500	265.430	-0.12	-0.12	0.00	0.12	0.00	0.12	-0.12	0.00	0.00	0.00
7/2/2014	110	664	265.300	265.320	265.420	265.380	265.420	265.460	265.420	265.350	265.500	265.450	-0.12	-0.24	0.00	0.12	0.00	0.24	-0.12	0.00	0.00	0.24
7/7/2014	115	669	265.290	265.320	265.420	265.370	265.420	265.440	265.400	265.350	265.500	265.430	-0.24	-0.24	0.00	0.00	0.00	0.00	-0.36	0.00	0.00	0.00
7/14/2014	122	676	265.310	265.340	265.440	265.380	265.425	265.450	265.420	265.360	265.510	265.435	0.00	0.00	0.24	0.12	0.06	0.12	-0.12	0.12	0.12	0.06
7/22/2014	130	684	265.300	265.330	265.430	265.365	265.430	265.450	265.410	265.360	265.500	265.440	-0.12	-0.12	0.12	-0.06	0.12	0.12	-0.24	0.12	0.00	0.12
7/28/2014	136	690	265.300	265.330	265.430	265.380	265.430	265.450	265.410	265.360	265.500	265.440	-0.12	-0.12	0.12	0.12	0.12	0.12	-0.24	0.12	0.00	0.12
8/4/2014	143	697	265.290	265.330	265.420	265.380	265.420	265.440	265.420	265.360	265.500	265.440	-0.24	-0.12	0.00	0.12	0.00	0.00	-0.12	0.12	0.00	0.12
8/14/2014	153	707	265.300	265.330	265.420	265.370		265.440	265.410	265.350	265.500	265.430	-0.12	-0.12	0.00	0.00		0.00	-0.24	0.00	0.00	0.00
8/19/2014	158	712	265.300	265.330	265.430	265.370		265.440	265.400	265.350	265.500	265.440	-0.12	-0.12	0.12	0.00		0.00	-0.36	0.00	0.00	0.12
8/27/2014	166	720	265.300	265.330	265.430	265.370		265.450	265.400	265.350	265.500	265.440	-0.12	-0.12	0.12	0.00		0.12	-0.36	0.00	0.00	0.12
9/4/2014	174	728	265.300	265.330	265.430	265.360	265.430	265.440	265.400	265.350	265.500	265.440	-0.12	-0.12	0.12	-0.12	0.12	0.00	-0.36	0.00	0.00	0.12
9/9/2014	179	733	265.300	265.330	265.420	265.360	265.420	265.440	265.400	265.350	265.500	265.440	-0.12	-0.12	0.00	-0.12	0.00	0.00	-0.36	0.00	0.00	0.12
9/17/2014	187	741	265.300	265.330	265.420	265.360	265.420	265.440	265.400	265.340	265.500	265.440	-0.12	-0.12	0.00	-0.12	0.00	0.00	-0.36	-0.12	0.00	0.12
9/23/2014	193	747	265.300	265.330	265.430	265.360	265.430	265.440	265.400	265.350	265.500	265.440	-0.12	-0.12	0.12	-0.12	0.12	0.00	-0.36	0.00	0.00	0.12
9/30/2014	200	754	265.300	265.330	265.420	265.360	265.410	265.430	265.390	265.340	265.500	265.440	-0.12	-0.12	0.00	-0.12	-0.12	-0.12	-0.48	-0.12	0.00	0.12
10/8/2014	208	762	265.300	265.330	265.430	265.370	265.420	265.440	265.390	265.340	265.480	265.440	-0.12	-0.12	0.12	0.00	0.00	0.00	-0.48	-0.12	-0.24	0.12
10/17/2014	217	771	265.300	265.330	265.420	265.370	265.430	265.440	265.400	265.350	265.500	265.440	-0.12	-0.12	0.00	0.00	0.12	0.00	-0.36	0.00	0.00	0.12
10/23/2014	223	777	265.300		265.430	265.380	265.430	265.440	265.400	265.340	265.500	265.440	-0.12	-0.12	0.12	0.12	0.12	0.00	-0.36	-0.12	0.00	0.12
10/30/2014	230	784	265.300	265.330	265.420	265.370	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	0.00	0.00	0.00	-0.12	-0.36	-0.12	0.00	0.12
11/6/2014	237	791	265.300	265.330	265.420	265.380	265.420	265.430	265.400		265.500	265.440	-0.12	-0.12	0.00	0.12	0.00	-0.12	-0.36		0.00	0.12
11/11/2014	242	796	265.300	265.330	265.430	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	0.12	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
11/20/2014	251	805	265.300	265.330	265.430	265.390	265.420	265.430	265.400		265.500	265.440	-0.12	-0.12	0.12	0.24	0.00	-0.12	-0.36		0.00	0.12
11/24/2014	255	809	265.300	265.330	265.430	265.380	265.420	265.440	265.400	265.340	265.500	265.440	-0.12	-0.12	0.12	0.12	0.00	0.00	-0.36	-0.12	0.00	0.12
12/5/2014	266	820	265.300	265.330	265.430	265.380	265.420	265.440	265.400	265.340	265.500	265.440	-0.12	-0.12	0.12	0.12	0.00	0.00	-0.36	-0.12	0.00	0.12
12/9/2014	270	824	265.300	265.330	265.430	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	0.12	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
12/15/2014	276	830	265.300	265.330	265.430	265.380	265.410	265.440	265.400	265.330	265.500	265.440	-0.12	-0.12	0.12	0.12	-0.12	0.00	-0.36	-0.24	0.00	0.12
12/22/2014	283	837	265.300	265.330	265.420	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	0.00	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
12/29/2014	290	844	265.300	265.330	265.430	265.390	265.430	265.440	265.400	265.340	265.500	265.440	-0.12	-0.12	0.12	0.24	0.12	0.00	-0.36	-0.12	0.00	0.12
1/6/2015	298	852	265.300	265.330	265.430	265.380	265.430	265.440	265.400	265.340	265.500	265.440	-0.12	-0.12	0.12	0.12	0.12	0.00	-0.36	-0.12	0.00	0.12

Date	Days Since 9/4/2014	Days Since 9/6/2012	Survey Measurement (ft, msl)										Cumulative Movement Since Installation (inches)									
			MM1	MM2	MM3	MM4	MM5	MM6	MM7	MM8	MM9	MM10	MM1	MM2	MM3	MM4	MM5	MM6	MM7	MM8	MM9	MM10
<b>Table 8: Mud Mat Marker Readings and Movements (continued)</b>																						
1/13/2015	305	859	265.310	265.330	265.430	265.390	265.430	265.450	265.400	265.340	265.500	265.450	0.00	-0.12	0.12	0.24	0.12	0.12	-0.36	-0.12	0.00	0.24
1/20/2015	312	866	265.300	265.330	265.430	265.390	265.420	265.430	265.390	265.340	265.500	265.450	-0.12	-0.12	0.12	0.24	0.00	-0.12	-0.48	-0.12	0.00	0.24
1/27/2015	319	873	265.300	265.330	265.440	265.380	265.420	265.430	265.400	265.340	265.500	265.430	-0.12	-0.12	0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.00
2/5/2015	328	882	265.310	265.330	265.440	265.380	265.420	265.430	265.400	265.340	265.500	265.440	0.00	-0.12	0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
2/12/2015	335	889	265.310	265.330	265.440	265.380	265.420	265.430	265.400	265.340	265.500	265.440	0.00	-0.12	0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
2/17/2015	340	894	265.310	265.330	265.440	265.380	265.420	265.430	265.400	265.340	265.500	265.440	0.00	-0.12	0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
2/26/2015	349	903	265.310	265.330	265.440	265.380	265.420	265.430	265.400	265.340	265.500	265.440	0.00	-0.12	0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
3/3/2015	354	908	265.300	265.330	265.440	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
3/9/2015	360	914	265.300	265.330	265.440	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
3/20/2015	371	925	265.300			265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12			0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
3/25/2015	376	930	265.300	265.320	265.420	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	-0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
4/2/2015	384	938	265.300	265.320	265.420	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	-0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
4/6/2015	388	942	265.300	265.320	265.420	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	-0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
4/16/2015	398	952	265.300	265.320	265.420	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	-0.24	0.12	0.00	-0.12	-0.36	-0.12	0.00	0.12
4/21/2015	403	957	265.300	265.320	265.420	265.380			265.400	265.340	265.500	265.440	-0.12	-0.12	-0.24	0.12			-0.36	-0.12	0.00	0.12
4/27/2015	409	963	265.300	265.320	265.420	265.380	265.420	265.430	265.400	265.340	265.500	265.440	-0.12	-0.12	-0.24	0.12	0.00	0.00	-0.36	-0.12	0.00	0.12
5/19/2015	431	985	265.300	265.320	265.420	265.370	265.420		265.400	265.340	265.490	265.430	-0.12	-0.12	-0.24	0.00	0.00		-0.36	-0.12	-0.12	0.00
5/27/2015	439	993	265.301	265.318	265.422	265.375	265.421		265.396	265.341	265.488	265.430	-0.11	-0.14	-0.22	0.06	0.01		-0.41	-0.11	-0.14	0.00
6/2/2015	445	999	265.300	265.320	265.420	265.370	265.420	265.430	265.400	265.340	265.490	265.430	-0.12	-0.12	-0.24	0.00	0.00		-0.36	-0.12	-0.12	0.00
6/9/2015	452	1006	265.300	265.320					265.400	265.340	265.490	265.430	-0.12	-0.12					-0.36	-0.12	-0.12	0.00
6/16/2015	459	1013	265.290	265.320	265.420	265.370	265.420	265.430	265.400	265.340	265.490	265.430	-0.24	-0.12	-0.24	0.00	0.00	0.00	-0.36	-0.12	-0.12	0.00
6/22/2015	465	1019	265.300	265.320	265.420	265.370	265.420	265.430	265.400	265.340	265.490	265.430	-0.12	-0.12	-0.24	0.00	0.00	0.00	-0.36	-0.12	-0.12	0.00

**Table 9: Footing Marker Readings and Movements**

Date	Days Since 9/4/2014	Days Since 9/6/2012	Survey Measurement (ft, msl)									Cumulative Movement Since Installation (inches)								
			BM1	BM2	BM3	BM4	BM5	BM6	BM7	BM8	BM9	BM1	BM2	BM3	BM4	BM5	BM6	BM7	BM8	BM9
9/4/2014	0	728			271.250					271.130				0.000				0.000	0.000	
9/9/2014	5	733			271.250				271.250	271.130				0.000				0.000	0.000	
9/17/2014	13	741			271.250	271.000			271.250	271.130				0.000	0.000			0.000	0.000	
9/23/2014	19	747			271.250	271.000			271.250	271.130				0.000	0.000			0.000	0.000	
9/30/2014	26	754		271.150	271.250	271.010			271.250	271.130			0.000	0.000	0.120			0.000	0.000	
10/8/2014	34	762	271.270	271.150	271.240	271.010			271.250	271.120		0.000	0.000	-0.120	0.120			0.000	-0.120	
10/17/2014	43	771	271.270	271.150	271.250	271.010			271.250	271.120		0.000	0.000	0.000	0.120			0.000	-0.120	
10/23/2014	49	777	271.270	271.150	271.250	271.020			271.250	271.130		0.000	0.000	0.000	0.240			0.000	0.000	
10/30/2014	56	784	271.270	271.150	271.250	271.020			271.250			0.000	0.000	0.000	0.240			0.000	0.000	
11/6/2014	63	791	271.270	271.150	271.250	271.020			271.250	271.130		0.000	0.000	0.000	0.240			0.000	0.000	
11/11/2014	68	796	271.270	271.150	271.250	271.020			271.260	271.130		0.000	0.000	0.000	0.240			0.000	0.000	
11/20/2014	77	805	271.270	271.150	271.250	271.020			271.260	271.130		0.000	0.000	0.000	0.240			0.000	0.000	
11/24/2014	81	809	271.270	271.150	271.250	271.020		271.120	271.260	271.130		0.000	0.000	0.000	0.240			0.000	0.000	
12/5/2014	92	820	271.270	271.150	271.250	271.020		271.120	271.260	271.130		0.000	0.000	0.000	0.240		0.000	0.000	0.000	
12/9/2014	96	824	271.270	271.150	271.250	271.020		271.120	271.260	271.130		0.000	0.000	0.000	0.240		0.000	0.000	0.000	
12/15/2014	102	830	271.270	271.150	271.250	271.020		271.120	271.260	271.130		0.000	0.000	0.000	0.240		0.000	0.000	0.000	
12/22/2014	109	837	271.270	271.150	271.250	271.020		271.120	271.260	271.130		0.000	0.000	0.000	0.240		0.000	0.000	0.000	
12/29/2014	116	844	271.230	271.140	271.250	271.020		271.120	271.260	271.130		-0.480	-0.120	0.000	0.240		0.000	0.000	0.000	
1/6/2015	124	852	271.230	271.150	271.250	271.030		271.120	271.260	271.130		-0.480	0.000	0.000	0.360		0.000	0.000	0.000	
1/13/2015	131	859	271.230	271.150	271.250	271.040		271.130	271.260	271.140		-0.480	0.000	0.000	0.480		0.120	0.000	0.120	
1/20/2015	138	866	271.280	271.150	271.250	271.040		271.120	271.250	271.130	272.490	0.120	0.000	0.000	0.480		0.000	-0.120	0.000	0.000
1/27/2015	145	873	271.280					271.100	271.250	271.130		0.120					-0.240	-0.120	0.000	
2/5/2015	154	882	271.280	271.150	271.250	271.040		271.130	271.260	271.140	272.490	0.120	0.000	0.000	0.000		0.120	0.000	0.120	0.000
2/12/2015	161	889	271.280	271.150	271.250	271.040		271.130	271.260	271.140	272.490	0.120	0.000	0.000	0.000		0.120	0.000	0.120	0.000
2/17/2015	166	894	271.280	271.150				271.130	271.260	271.140		0.120	0.000				0.120	0.000	0.120	
2/26/2015	175	903	271.280	271.150	271.250	271.040		271.130	271.260	271.140	272.490	0.120	0.000	0.000	0.000		0.120	0.000	0.120	0.000
3/3/2015	180	908	271.280	271.150	271.250	271.040		271.130	271.260	271.140	272.490	0.120	0.000	0.000	0.000		0.120	0.000	0.120	0.000
3/9/2015	186	914	271.280	271.150	271.250	271.040		271.130	271.260	271.140	272.490	0.120	0.000	0.000	0.000		0.120	0.000	0.120	0.000
3/20/2015	197	925	271.280	271.150	271.250	271.040		271.130	271.260	271.140	272.490	0.120	0.000	0.000	0.000		0.120	0.000	0.120	0.000
3/25/2015	202	930	271.280	271.150	271.250	271.020	271.220	271.100	271.260	271.140	272.490	0.120	0.000	0.000	-0.240		-0.240	0.000	0.120	0.000
4/2/2015	210	938	271.280	271.150	271.250	271.020	271.220	271.100	271.260	271.140	272.490	0.120	0.000	0.000	-0.240	0.000	-0.240	0.000	0.120	0.000
4/6/2015	214	942	271.270	271.150	271.250	271.020	271.220	271.100	271.260	271.130	272.490	0.000	0.000	0.000	-0.240	0.000	-0.240	0.000	0.000	0.000
4/16/2015	224	952	271.270	271.150	271.250	271.020	271.220	271.100	271.260	271.130	272.490	0.000	0.000	0.000	-0.240	0.000	-0.240	0.000	0.000	0.000
4/21/2015	229	957	271.270	271.150	271.250	271.020	271.220	271.100	271.260	271.120	272.490	0.000	0.000	0.000	-0.240	0.000	-0.240	0.000	-0.120	0.000
4/27/2015	235	963	271.270	271.150	271.250	271.020	271.220	271.100	271.260	271.120	272.490	0.000	0.000	0.000	-0.240	0.000	-0.240	0.000	-0.120	0.000
5/19/2015	257	985	271.270	271.150	271.240	271.020	271.215	271.100	271.250	271.120	272.480	0.000	0.000	-0.120	-0.240	-0.060	-0.240	-0.120	-0.120	-0.120
5/27/2015	265	993	271.276	271.155	271.250	271.021	271.214	271.104	271.255	271.128	272.483	0.072	0.060	0.000	-0.228	-0.072	-0.192	-0.060	-0.024	-0.084
6/2/2015	271	999	271.270	271.150	271.246	271.020	271.220	271.100	271.250	271.120	272.480	0.000	0.000	-0.048	-0.240	0.000	-0.240	-0.120	-0.120	-0.120

**Table 10: Curb Marker Readings and Movements**

Date	Days Since 9/4/2014	Days Since 9/6/2012	Survey Measurement (ft, msl)										Cumulative Movement Since Installation (inches)									
			SM1	SM2	SM3	SM4	SM5	SM6	SM7	SM8	SM9	SM10	SM1	SM2	SM3	SM4	SM5	SM6	SM7	SM8	SM9	SM10
10/8/2015	0	1127	268.540	268.568	268.536	268.532	268.531	268.541	268.564	268.561	268.558	268.556	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/12/2015	4	1131	268.543	268.571	268.549	268.544	268.541	268.55	268.576	268.565	268.561	268.564	0.04	0.04	0.16	0.14	0.12	0.11	0.14	0.05	0.04	0.10
10/19/2015	11	1138	268.54	268.565	268.547	268.541	268.541	268.55	268.573	268.562	268.561	268.553	0.00	-0.04	0.13	0.11	0.12	0.11	0.11	0.01	0.04	-0.04
10/21/2015	13	1140	268.527	268.553	268.533	268.529	268.532	268.541	268.566	268.555	268.556	268.544	-0.16	-0.18	-0.04	-0.04	0.01	0.00	0.02	-0.07	-0.02	-0.14
10/26/2015	18	1145	268.525	268.551	268.525	268.519	268.525	268.532	268.554	268.541	268.538	268.542	-0.18	-0.20	-0.13	-0.16	-0.07	-0.11	-0.12	-0.24	-0.24	-0.17
11/2/2015	25	1152	268.515	268.538	268.525	268.519	268.531	268.54	268.559	268.552	268.55	268.529	-0.30	-0.36	-0.13	-0.16	0.00	-0.01	-0.06	-0.11	-0.10	-0.32
11/10/2015	33	1160	268.522	268.547	268.541	268.539	268.537	268.543	268.562	268.56	268.554	268.536	-0.22	-0.25	0.06	0.08	0.07	0.02	-0.02	-0.01	-0.05	-0.24
11/16/2015	39	1166	268.534	268.559	268.555	268.55	268.548	268.553	268.573	268.57	268.565	268.546	-0.07	-0.11	0.23	0.22	0.20	0.14	0.11	0.11	0.08	-0.12
11/23/2015	46	1173	268.542	268.567	268.562	268.56	268.558	268.564	268.584	268.58	268.576	268.555	0.02	-0.01	0.31	0.34	0.32	0.28	0.24	0.23	0.22	-0.01
11/30/2015	53	1180	268.548	268.574	268.569	268.562	268.561	268.567	268.588	268.585	268.581	268.561	0.10	0.07	0.40	0.36	0.36	0.31	0.29	0.29	0.28	0.06
12/7/2015	60	1187	268.544	268.571	268.564	268.56	268.559	268.567	268.586	268.583	268.578	268.558	0.05	0.04	0.34	0.34	0.34	0.31	0.26	0.26	0.24	0.02
12/15/2015	68	1195	268.54	268.566	268.561	268.561	268.558	268.565	268.584	268.581	268.575	268.555	0.00	-0.02	0.30	0.35	0.32	0.29	0.24	0.24	0.20	-0.01
1/14/2016	98	1225	268.543	268.569	268.563	268.563	268.559	268.567	268.586	268.583	268.577	268.558	0.04	0.01	0.32	0.37	0.34	0.31	0.26	0.26	0.23	0.02
10/24/2016	382	1509	268.54	268.565	268.561	268.558	268.558	268.565	268.586	268.581	268.576	268.554	0.00	-0.04	0.30	0.31	0.32	0.29	0.26	0.24	0.22	-0.02
12/13/2016	432	1559	268.536	268.561	268.555	268.552	268.556	268.563	268.582	268.577	268.572	268.55	-0.05	-0.08	0.23	0.24	0.30	0.26	0.22	0.19	0.17	-0.07
12/27/2016	446	1573	268.521	268.545	268.542	268.524	268.538	268.543	268.563	268.559	268.554	268.533	-0.23	-0.28	0.07	-0.10	0.08	0.02	-0.01	-0.02	-0.05	-0.28

**Table 11: Roof Marker Survey Readings**

Date	Days Since 3/3/2015	Days Since 9/6/2012	Survey Measurements (ft, msl)																		
			RM1	RM2	RM3	RM4	RM5	RM6	RM7	RM8	RM9	RM10	RM11	RM12	RM13	RM14	RM15	RM16	RM17	RM18	RM19
3/3/2015	0	908										315.15									
3/9/2015	6	914										315.15									
3/20/2015	17	925										315.15									
3/25/2015	22	930								313.9	315.15	312.61									
4/2/2015	30	938	313.9								315.15	312.61									
4/6/2015	34	942	313.9	313.72							315.15	312.63	312.66								
4/16/2015	44	952	313.9	313.72							315.15	312.63	312.66								
4/21/2015	49	957	313.9	313.72							315.15	312.63	312.66								
4/27/2015	55	963	313.9	313.72							315.16	312.63	312.66								
5/19/2015	77	985	313.895	313.72	313.88					313.78	315.16	312.62	312.65	312.68						312.68	312.67
5/27/2015	85	993	313.903	313.722	313.878					313.774	315.158	312.624	312.651	312.68						312.685	312.679
6/2/2015	91	999	313.9	313.71	313.88		313.89		313.915	313.77	315.16	312.62	312.65	312.68		312.67			312.736	312.68	312.67
6/9/2015	98	1006	313.9	313.71	313.88	313.71	313.89		313.91	313.77	315.16	312.62	312.65	312.68	312.7	312.67			312.73	312.68	312.67
6/22/2015	111	1019	313.9	313.71	313.875	313.705	313.89	313.76	313.908	313.77	315.16	312.62	312.65	312.68	312.69	312.67	312.68	312.75	312.73	312.68	312.67
7/28/2015	147	1055	313.897	313.707	313.873	313.697	313.885	313.754	313.896	313.772	315.156	312.619	312.652	312.68	312.69	312.662	312.666	312.735	312.731	312.682	312.671
8/20/2015	170	1078	313.907	313.716	313.88	313.706	313.893	313.762	313.912	313.78		312.62	312.655	312.684	312.698	312.669	312.671	312.742	312.73	312.679	312.669
9/22/2015	203	1111	313.896	313.706	313.869	313.694	313.881	313.75	313.904	313.769	315.153	312.615	312.653	312.679	312.686	312.663	312.662	312.734	312.724	312.67	312.658
10/8/2015	219	1127	313.891	313.702	313.864	313.688	313.877	313.745		313.77	315.149	312.611	312.644		312.685			312.733	312.719		312.662
10/12/2015	223	1131	313.899	313.708	313.87	313.694	313.885	313.751	313.912	313.779	315.159	312.614	312.651		312.695		312.663	312.741	312.729	312.681	312.667
10/19/2015	230	1138	313.895	313.704	313.864	313.692	313.88	313.757	313.916	313.789	315.149	312.609	312.651		312.689		312.654	312.754	312.719	312.694	312.661
10/21/2015	232	1140	313.9	313.708	313.871	313.695	313.885	313.754	313.912	313.786	315.158	312.616	312.651		312.694		312.672	312.747		312.69	312.682
10/26/2015	237	1145	313.897	313.701	313.866	313.69	313.879	313.742	313.895	313.769	315.148	312.614	312.651		312.692		312.662	312.738	312.723	312.678	312.668
11/2/2015	244	1152	313.885	313.694	313.861	313.677	313.89	313.745	313.9	313.779	315.14	312.611	312.647		312.69		312.684	312.76	312.72	312.702	312.68
11/10/2015	252	1160	313.886	313.696	313.863	313.681	313.867	313.732	313.886	313.758	315.141	312.612	312.648	312.672	312.684	312.656	312.652	312.726	312.72	312.67	312.661
11/16/2015	258	1166	313.898	313.708		313.692	313.878	313.742	313.897	313.77	315.156	312.619	312.656	312.681	312.693	312.661	312.656	312.73	312.725	312.675	312.669
11/23/2015	265	1173		313.733	313.901	313.718	313.905	313.771	313.924	313.794	315.182	312.635	312.674		312.712		312.676	312.751	312.743	312.693	312.684
11/30/2015	272	1180	313.911	313.721	313.89	313.71	313.895	313.761	313.914	313.785	315.173	312.624	312.663	312.689			312.668	312.741	312.734	312.684	312.675
12/7/2015	279	1187	313.915	313.726	313.894	313.712	313.9	313.766	313.919	313.789	315.173	312.629	312.668	312.691	312.707		312.672	312.746	312.738	312.689	312.68
12/15/2015	287	1195	313.916	313.727	313.895	313.714	313.902	313.768	313.921	313.79	315.176	312.63		312.694	312.707		312.672	312.746	312.739	312.69	312.679
1/14/2016	317	1225	313.925	313.737	313.905	313.72		313.774	313.928	313.798	315.186	312.639	312.68	312.704	312.714		312.68	312.754	312.748	312.699	312.688
10/24/2016	601	1509	313.908	313.719	313.885	313.705		313.76		313.78	315.166	312.619	312.661	312.686	312.701		312.664	312.738	312.732	312.681	312.668
12/13/2016	651	1559	313.903	313.716	313.881	313.703		313.756		313.778	315.161	312.614	312.658	312.676			312.658	312.733	312.727	312.676	312.664
12/27/2016	665	1573	313.891	313.704	313.871	313.684		313.734	313.89	313.765	315.15	312.611	312.655	312.675	312.687		312.648	312.727	312.721	312.67	312.661

Table 12: Roof Marker Movements

Date	Days Since 3/3/2015	Days Since 9/6/2012	Cumulative Movements Since Installation (inches)																			
			RM1	RM2	RM3	RM4	RM5	RM6	RM7	RM8	RM9	RM10	RM11	RM12	RM13	RM14	RM15	RM16	RM17	RM18	RM19	
3/3/2015	0	908																				
3/9/2015	6	914									0.00											
3/20/2015	17	925									0.00											
3/25/2015	22	930									0.00											
4/2/2015	30	938									0.00	0.00										
4/6/2015	34	942	0.00								0.00	0.24										
4/16/2015	44	952	0.00	0.00							0.00	0.24	0.00									
4/21/2015	49	957	0.00	0.00							0.00	0.24	0.00									
4/27/2015	55	963	0.00	0.00							0.12	0.24	0.00									
5/19/2015	77	985	-0.06	0.00							0.12	0.12	-0.12									
5/27/2015	85	993	0.04	0.02	-0.02						-0.07	0.10	0.17	-0.11	0.00					0.06	0.11	
6/2/2015	91	999	0.00	-0.12	0.00						-0.12	0.12	0.12	-0.12	0.00					0.00	0.00	
6/9/2015	98	1006	0.00	-0.12	0.00			0.00		-0.06	-0.12	0.12	0.12	-0.12	0.00				-0.07	0.00	0.00	
6/22/2015	111	1019	0.00	-0.12	-0.06	-0.06	0.00			-0.08	-0.12	0.12	0.12	-0.12	0.00	-0.12	0.00		-0.07	0.00	0.00	
7/28/2015	147	1055	0.00	-0.12	-0.06	-0.06	0.00	0.00		-0.08	-0.12	0.12	0.12	-0.12	0.00	-0.12	0.00	0.00	-0.07	0.00	0.00	
8/20/2015	170	1078	0.12	-0.01	0.02	0.05	0.10	0.10		0.11	-0.02	0.12	0.13	-0.08	0.05	-0.02	0.08	0.06	0.08	-0.08	-0.04	-0.02
9/22/2015	203	1111	-0.01	-0.13	-0.11	-0.10	-0.05	-0.05		0.01	-0.16	0.08	0.07	-0.11	-0.01	-0.17	0.01	-0.05	-0.01	-0.16	-0.14	-0.16
10/8/2015	219	1127	-0.07	-0.18	-0.17	-0.17	-0.10	-0.11		0.01	-0.14	0.04	0.02	-0.22		-0.18			-0.02	-0.22		-0.11
10/12/2015	223	1131	0.02	-0.11	-0.10	-0.10	0.00	-0.04		0.11	-0.04	0.16	0.06	-0.13		-0.06		-0.04	0.07	-0.10	-0.01	-0.05
10/19/2015	230	1138	-0.02	-0.16	-0.17	-0.12	-0.06	0.04		0.16	0.08	0.04	0.00	-0.13		-0.13		-0.14	0.23	-0.22	0.14	-0.12
10/21/2015	232	1140	0.04	-0.11	-0.08	-0.08	0.00	0.00		0.11	0.05	0.14	0.08	-0.13		-0.07		0.07	0.14		0.10	0.13
10/26/2015	237	1145	0.00	-0.19	-0.14	-0.14	-0.07	-0.14		-0.10	-0.16	0.02	0.06	-0.13		-0.10		-0.05	0.04	-0.17	-0.05	-0.04
11/2/2015	244	1152	-0.14	-0.28	-0.20	-0.30	0.06	-0.11		-0.04	-0.04	-0.07	0.02	-0.18		-0.12		0.22	0.30	-0.20	0.24	0.11
11/10/2015	252	1160	-0.13	-0.25	-0.18	-0.25	-0.22	-0.26		-0.20	-0.29	-0.06	0.04	-0.17	-0.14	-0.19	-0.16	-0.17	-0.11	-0.24	-0.14	-0.12
11/16/2015	258	1166	0.01	-0.11		-0.12	-0.08	-0.14		-0.07	-0.14	0.12	0.12	-0.07	-0.04	-0.08	-0.10	-0.12	-0.06	-0.18	-0.08	-0.02
11/23/2015	265	1173		0.19	0.46	0.19	0.24	0.20		0.25	0.14	0.43	0.31	0.14		0.14		0.12	0.19	0.04	0.13	0.16
11/30/2015	272	1180	0.16	0.05	0.32	0.10	0.12	0.08		0.13	0.04	0.32	0.18	0.01	0.10			0.02	0.07	-0.07	0.02	0.05
12/7/2015	279	1187	0.20	0.11	0.37	0.12	0.18	0.14		0.19	0.08	0.32	0.24	0.07	0.12	-0.06		0.07	0.13	-0.02	0.08	0.11
12/15/2015	287	1195	0.22	0.12	0.38	0.14	0.20	0.17		0.22	0.10	0.36	0.25		0.16	-0.06		0.07	0.13	-0.01	0.10	0.10
1/14/2016	317	1225	0.32	0.24	0.50	0.22		0.24		0.30	0.19	0.48	0.36	0.22	0.28	0.02		0.17	0.23	0.10	0.20	0.20
10/24/2016	601	1509	0.12	0.02	0.26	0.04		0.07			-0.02	0.24	0.12	-0.01	0.06	-0.13		-0.02	0.04	-0.10	-0.01	-0.04
12/13/2016	651	1559	0.06	-0.01	0.22	0.01		0.02			-0.05	0.18	0.06	-0.05	-0.06			-0.10	-0.02	-0.16	-0.07	-0.08
12/27/2016	665	1573	-0.08	-0.16	0.10	-0.22		-0.24		-0.16	-0.20	0.05	0.02	-0.08	-0.07	-0.30		-0.22	-0.10	-0.23	-0.14	-0.12

**Figures**

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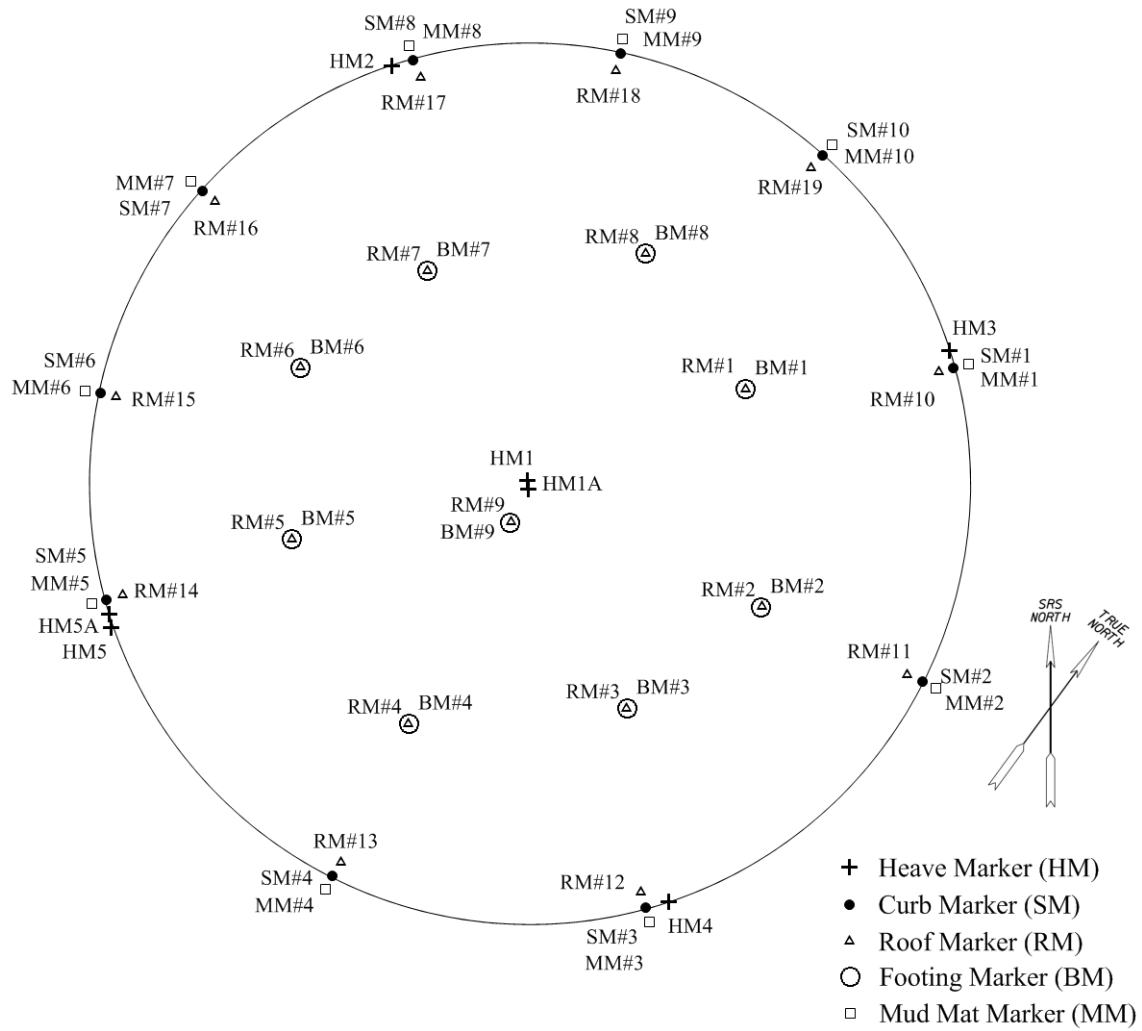


Figure 1: Survey Marker Locations

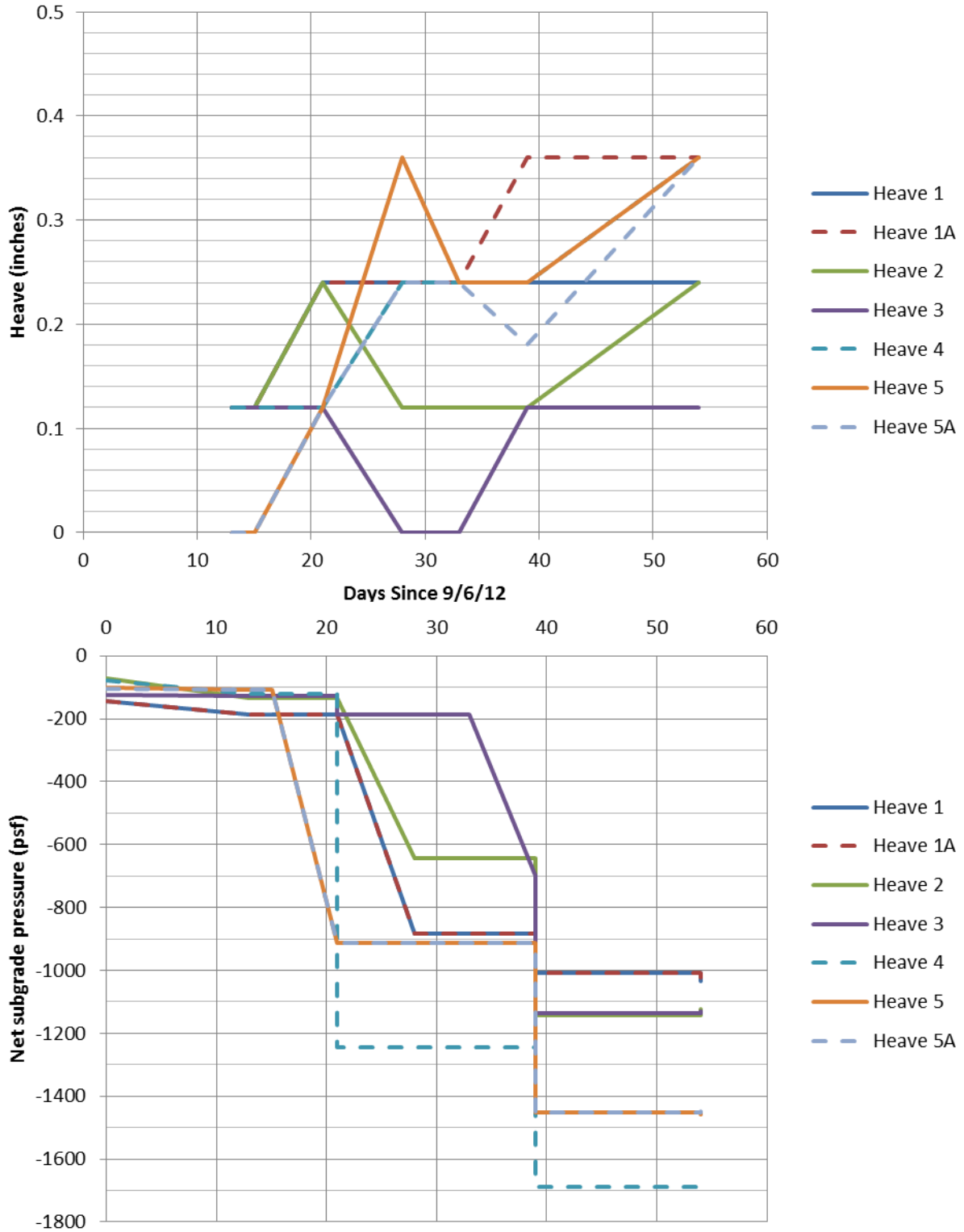


Figure 2: Heave Markers Summary

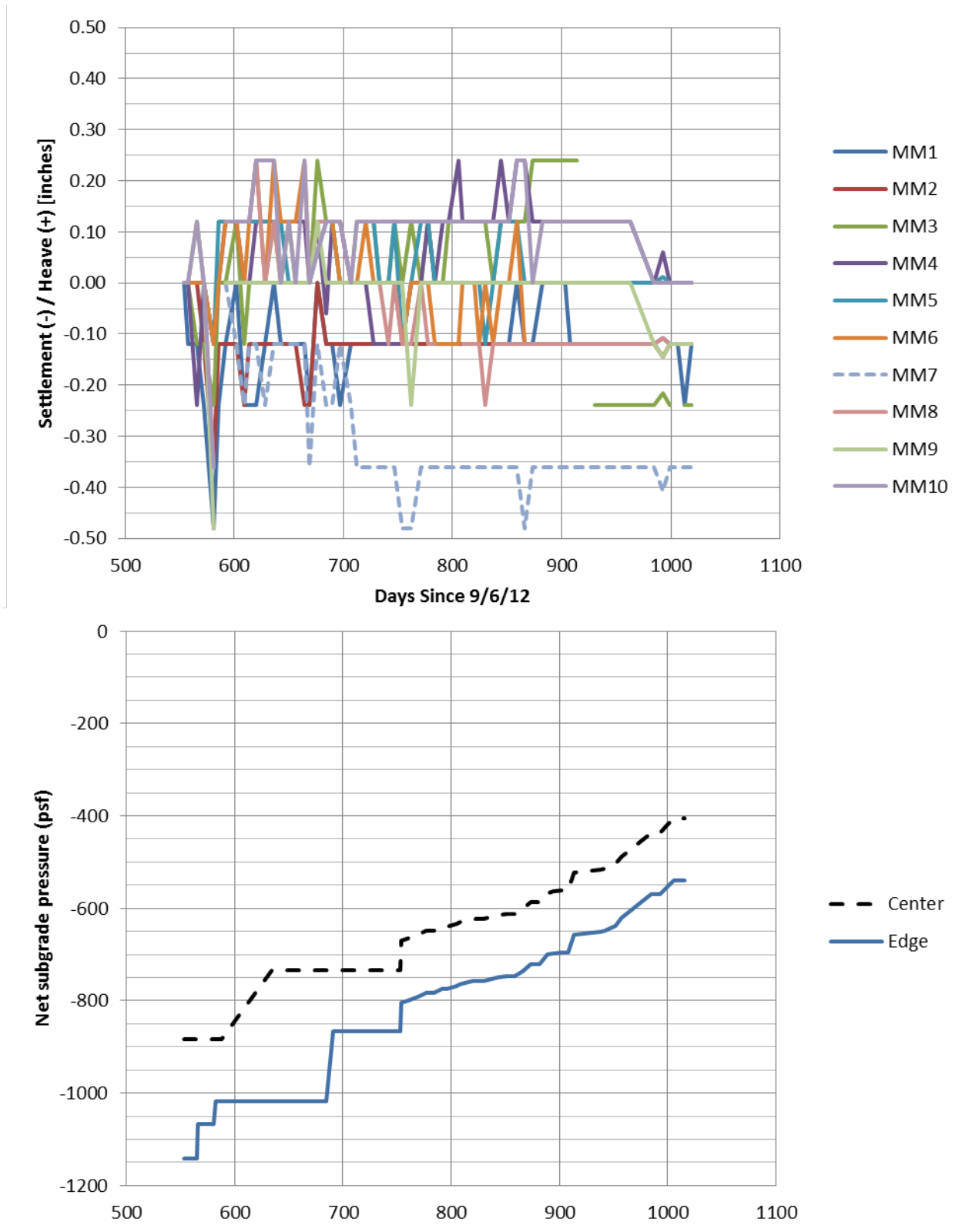


Figure 3: Mud Mat Marker Summary

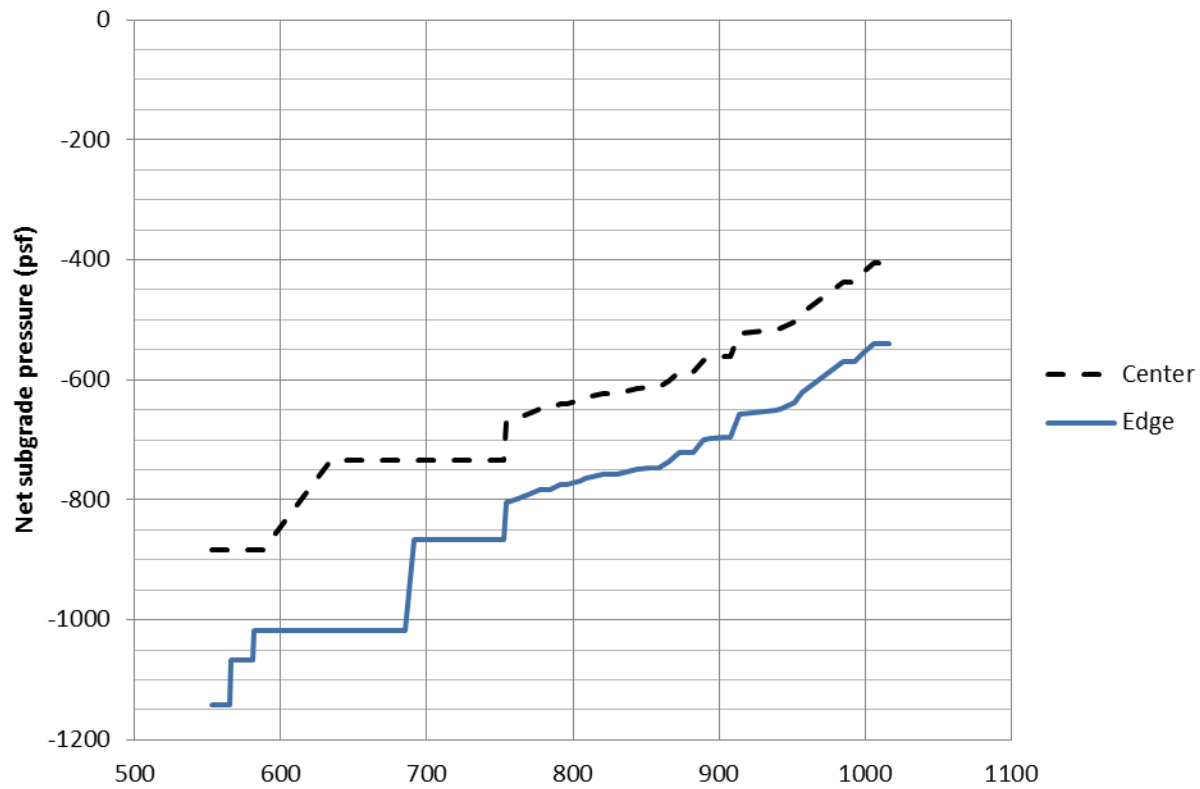
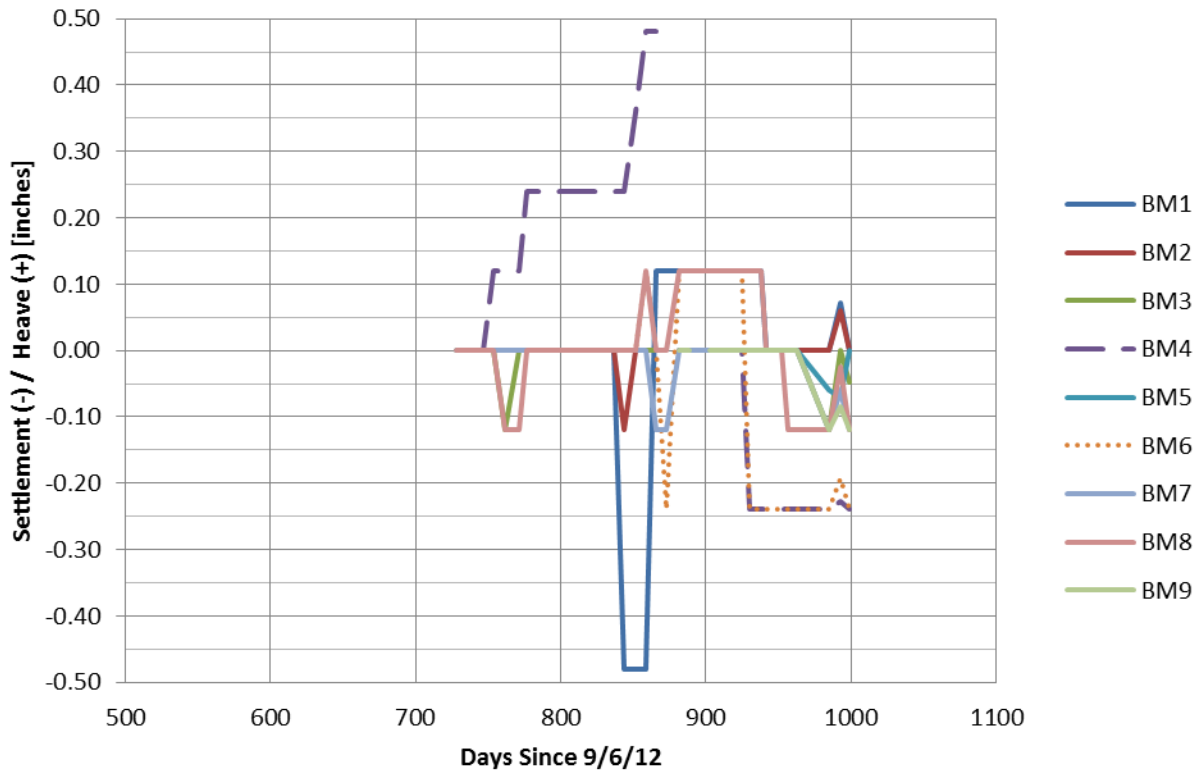


Figure 4: Footing Marker Summary

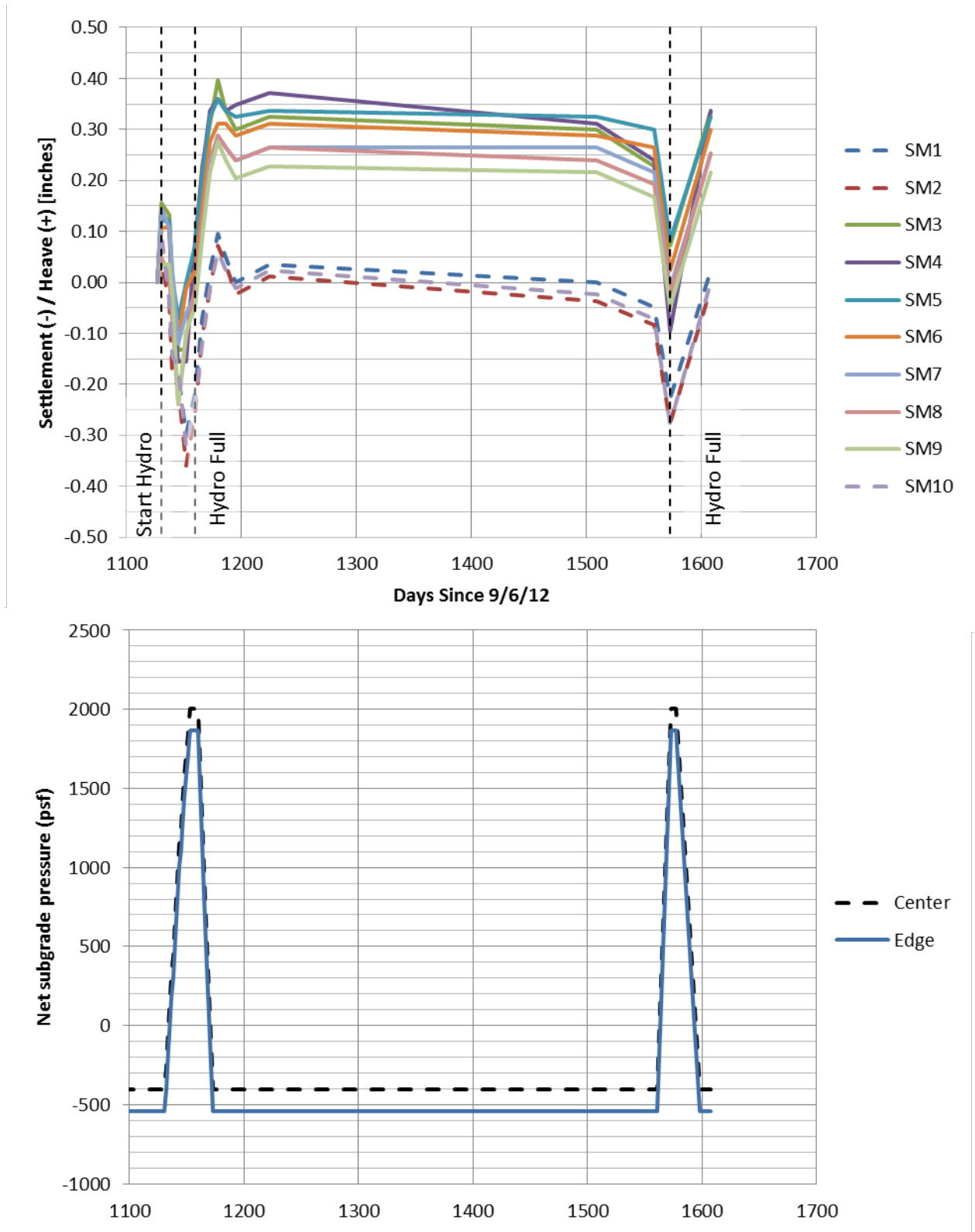


Figure 5: Curb Marker Summary

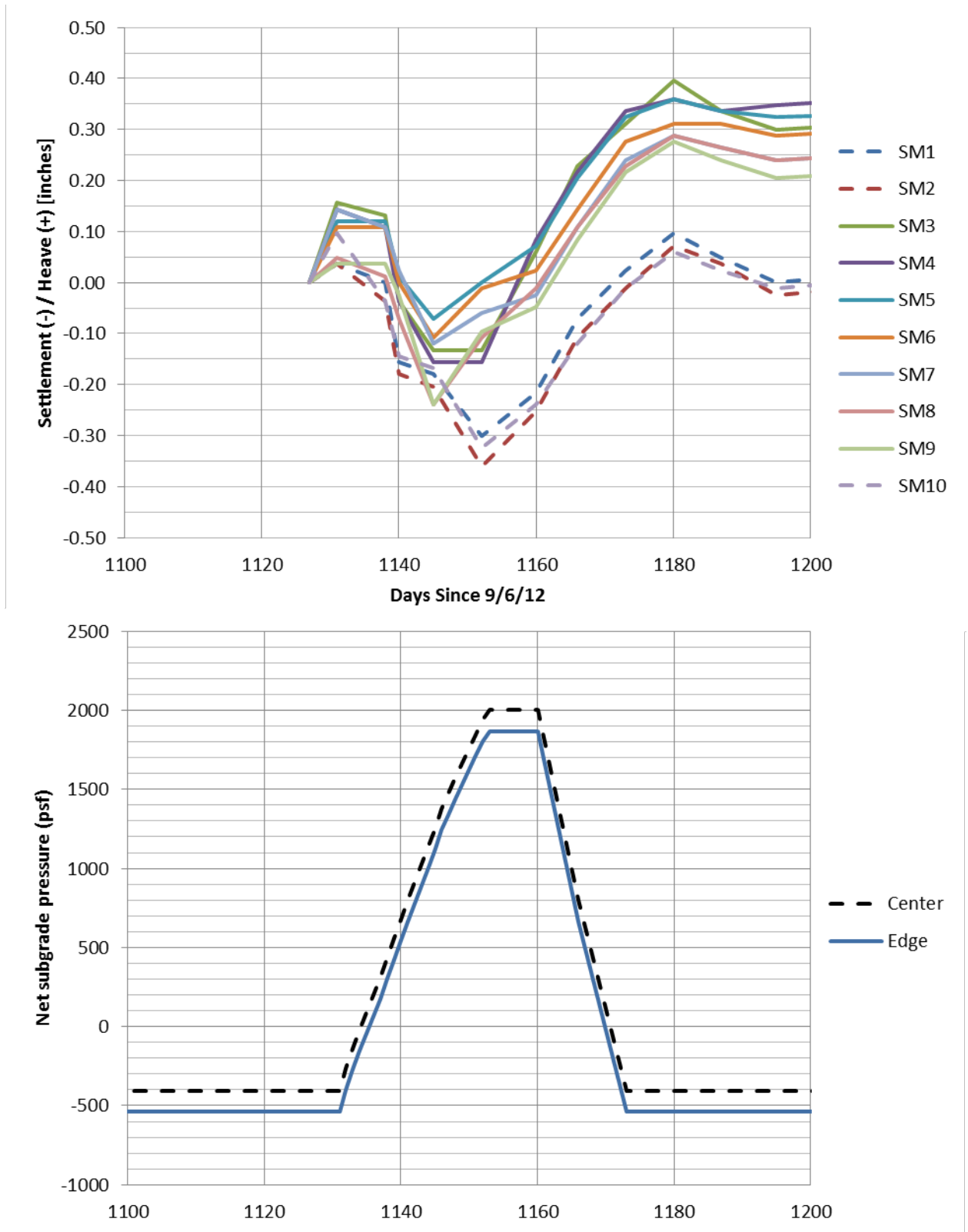


Figure 6: Curb Marker Movements during the Initial Leak Test

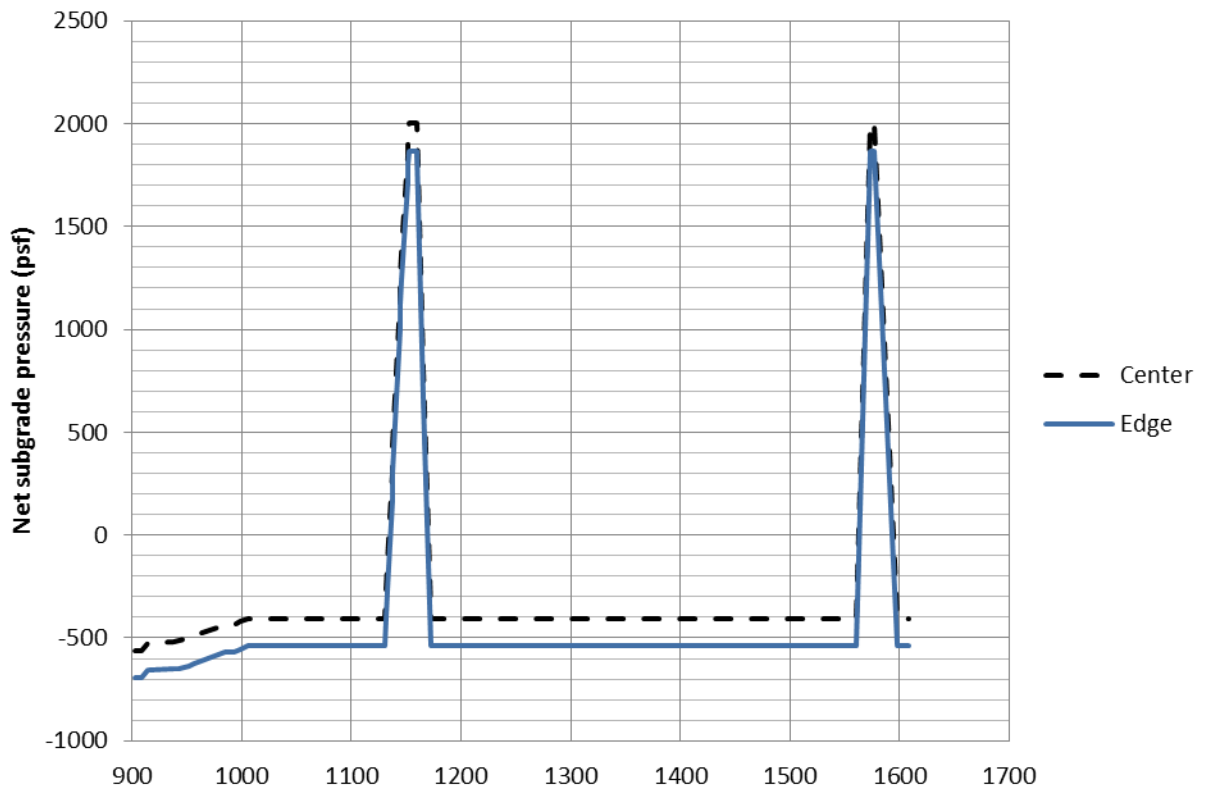
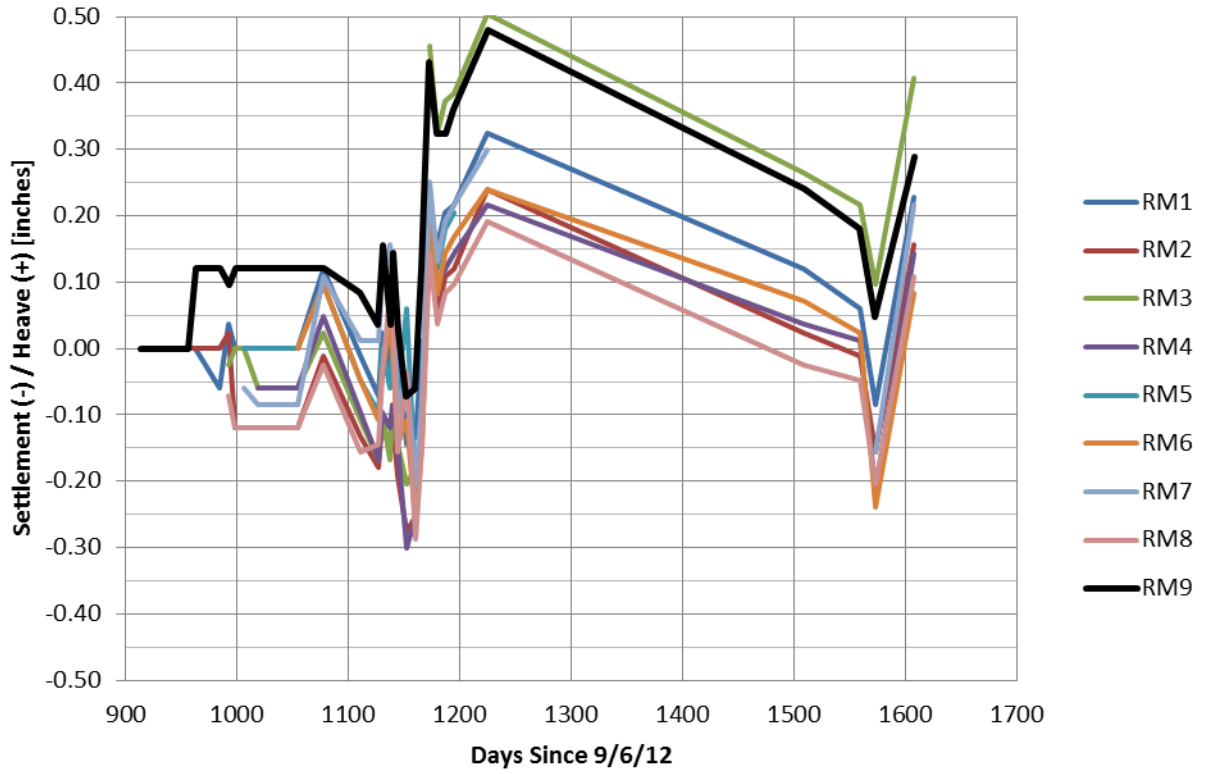


Figure 7: Interior Roof Marker Summary

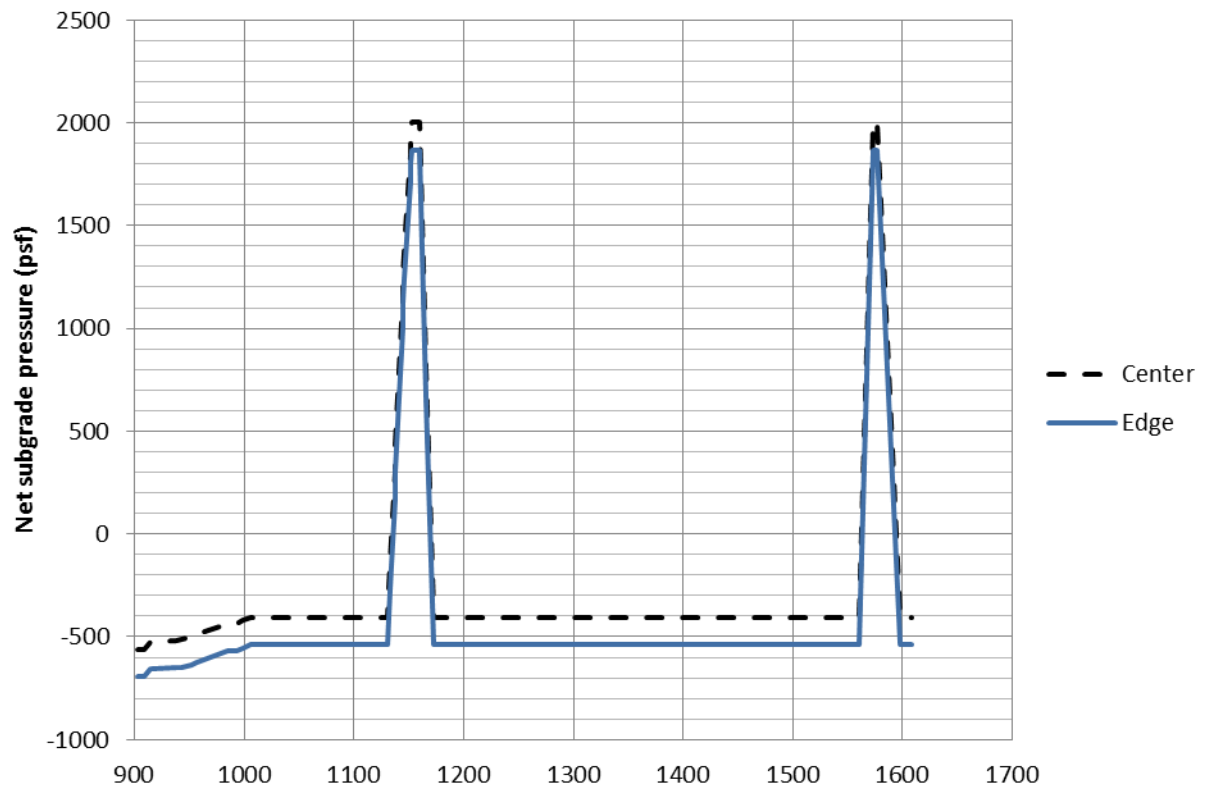
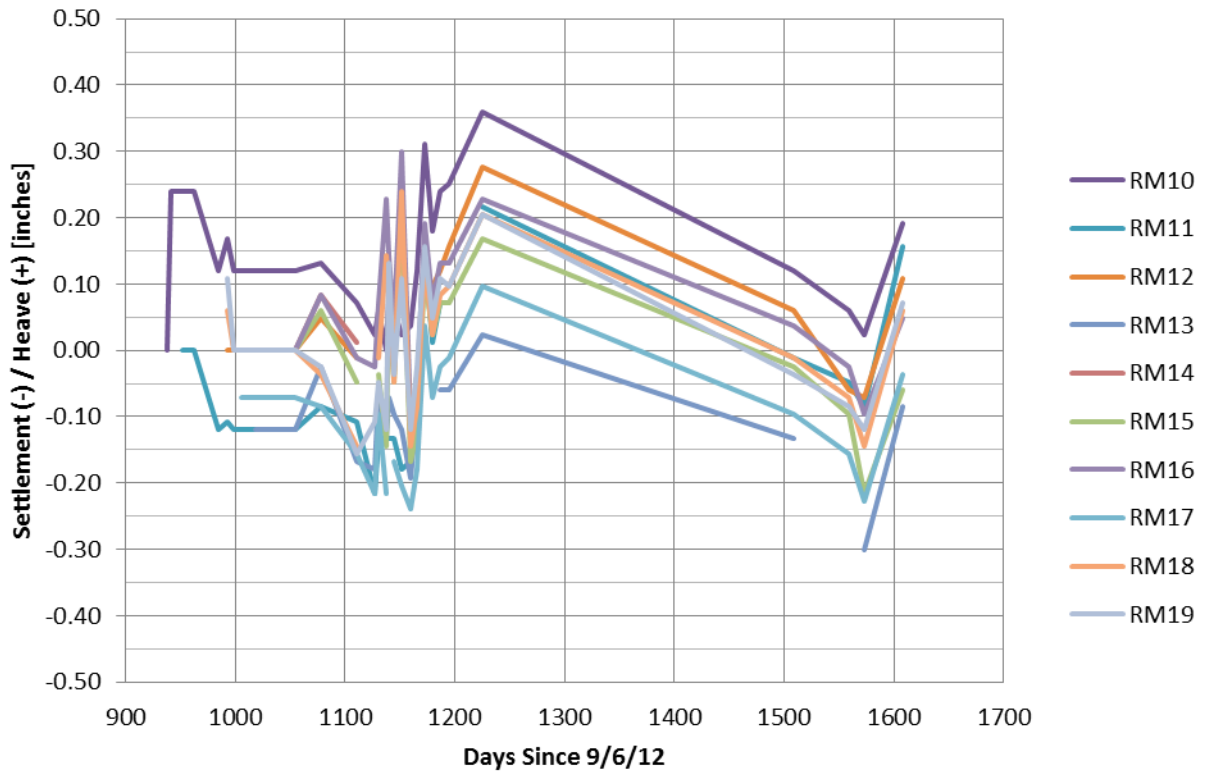


Figure 8: Perimeter Roof Marker Summary



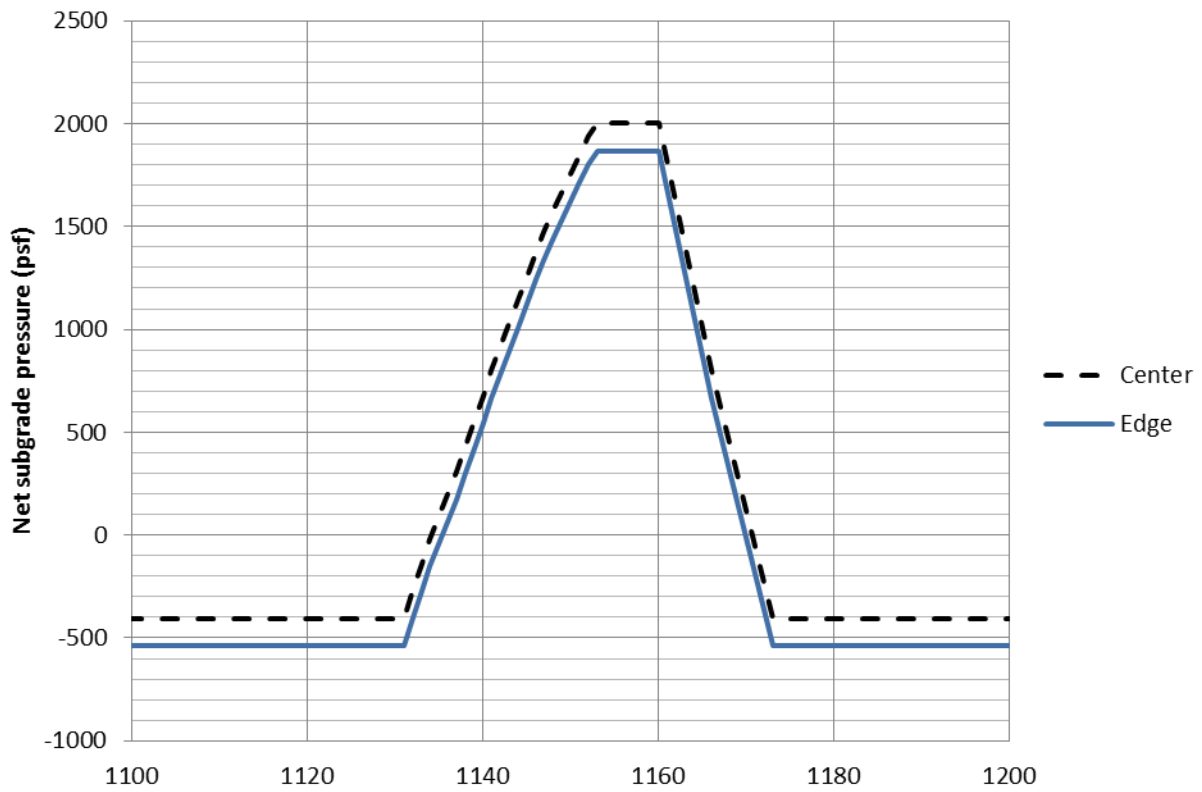
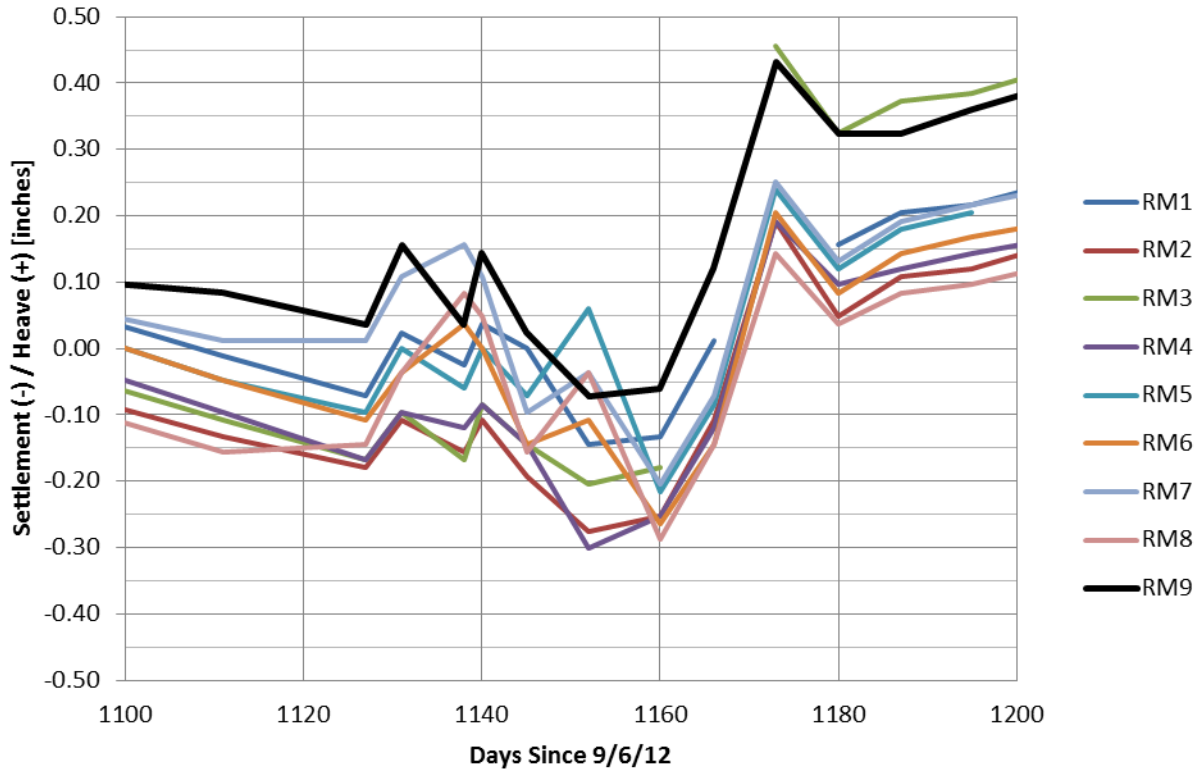


Figure 9: Interior Roof Marker Movements during the Initial Leak Test

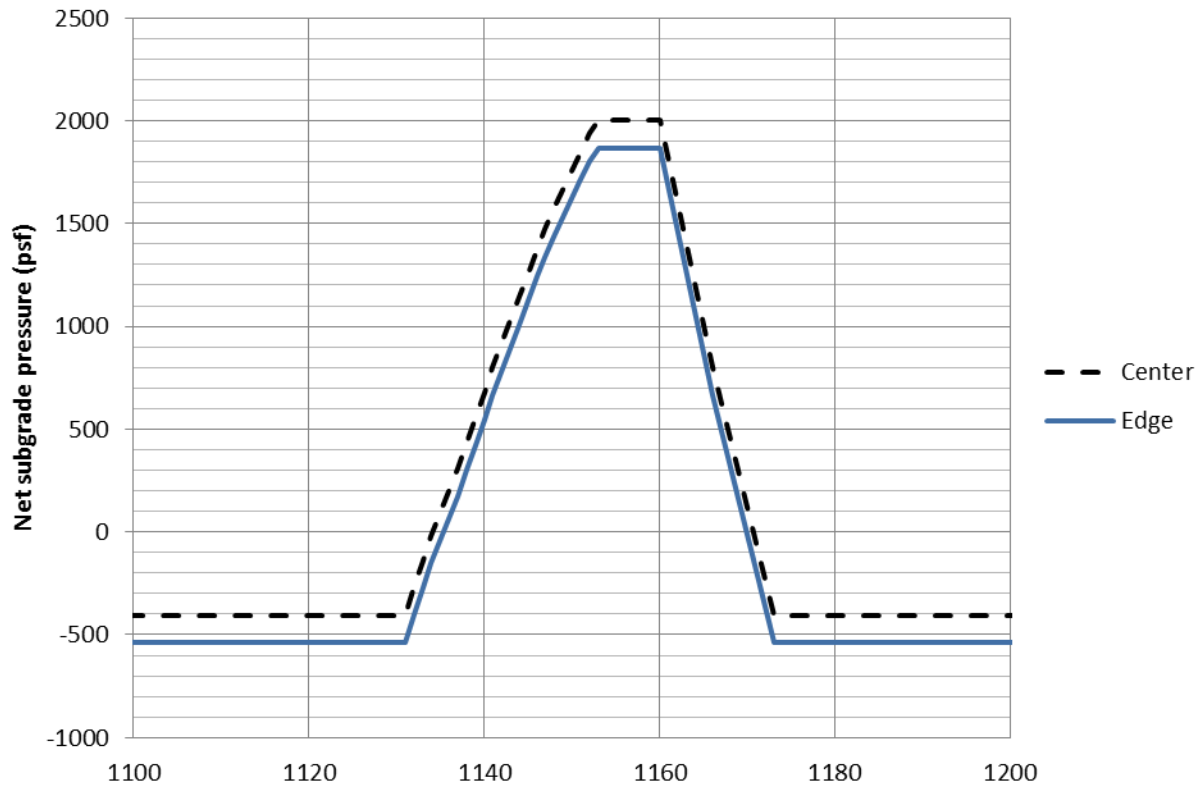
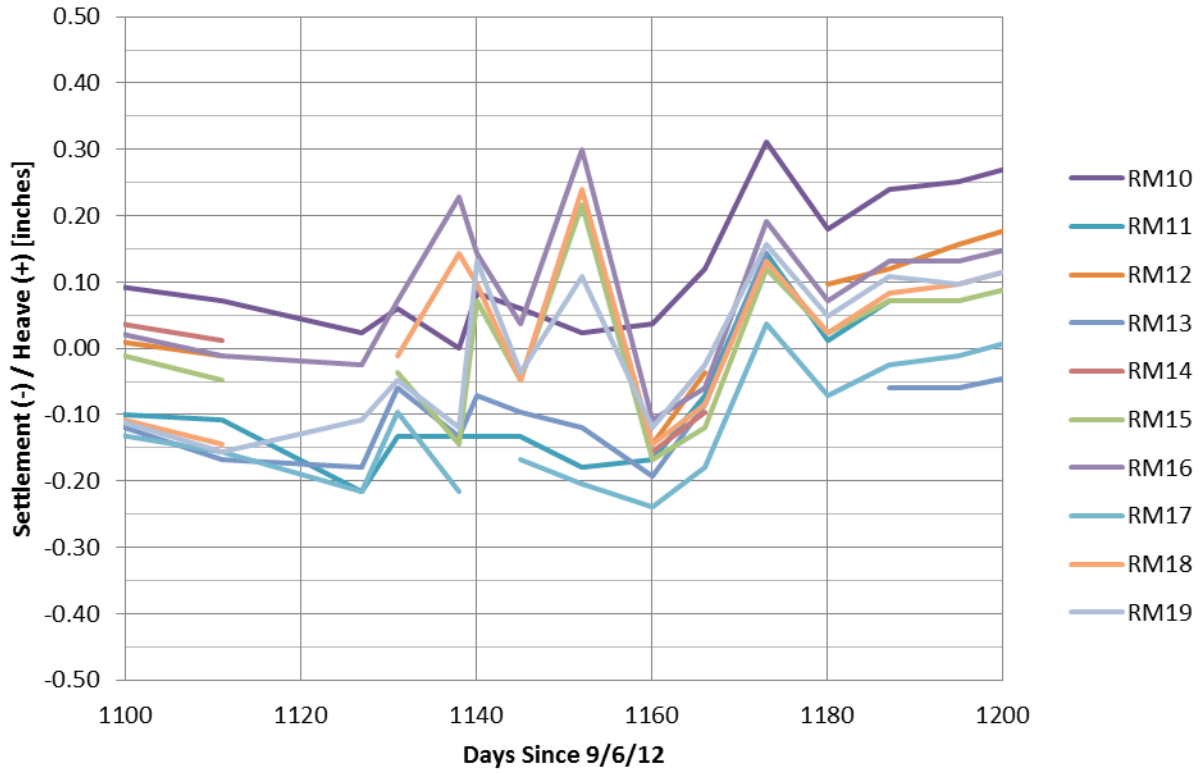
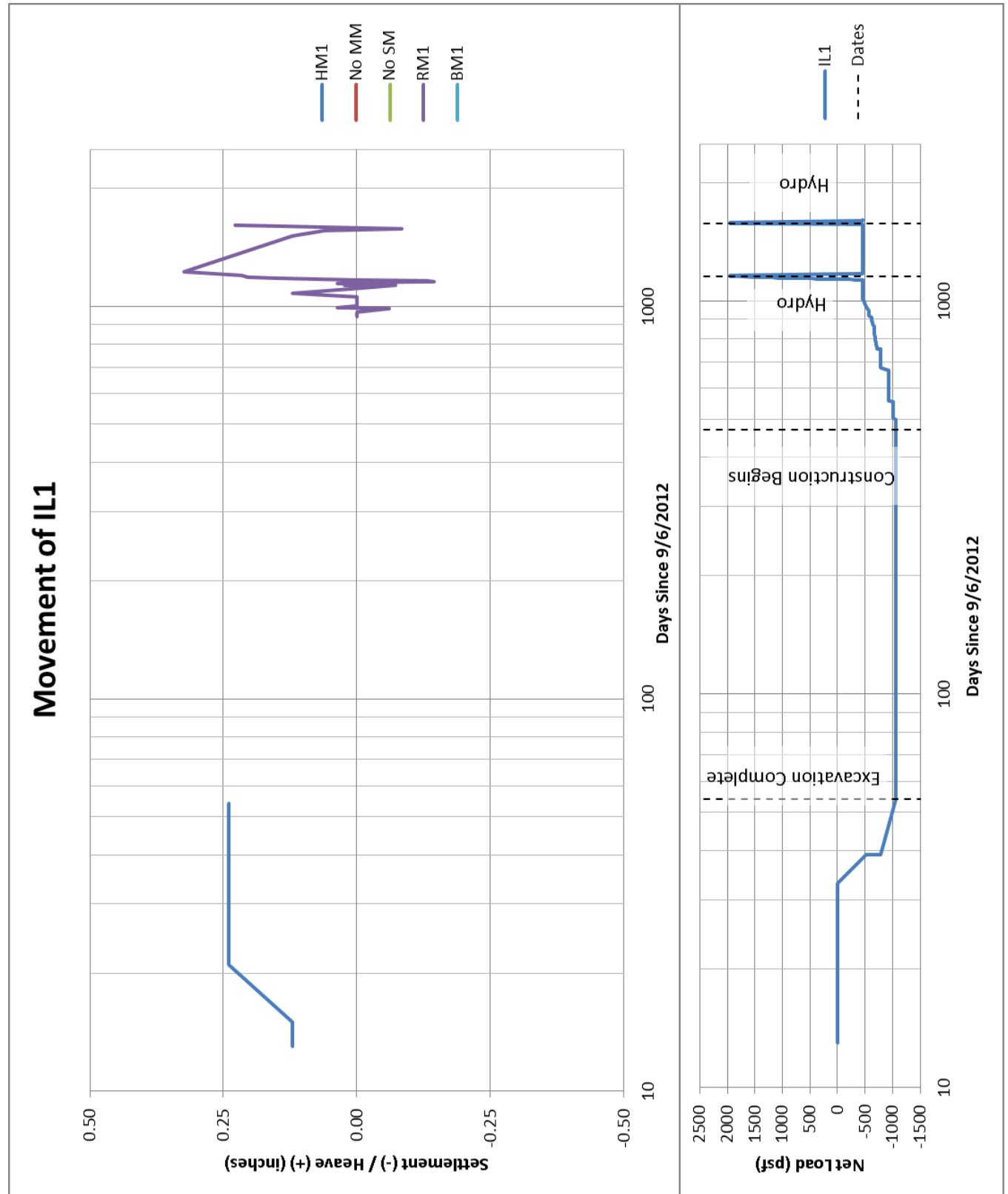


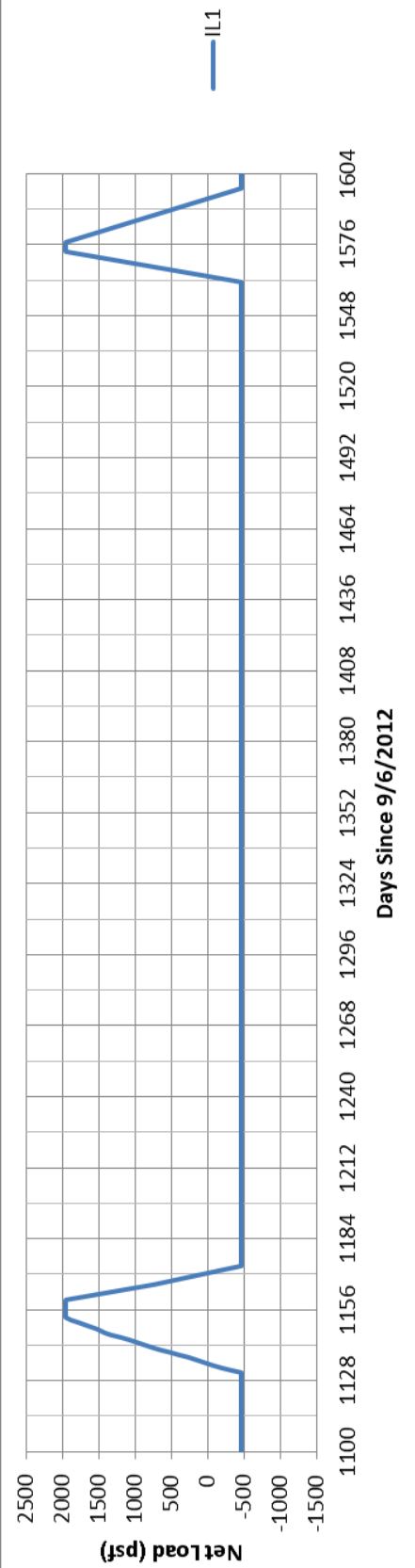
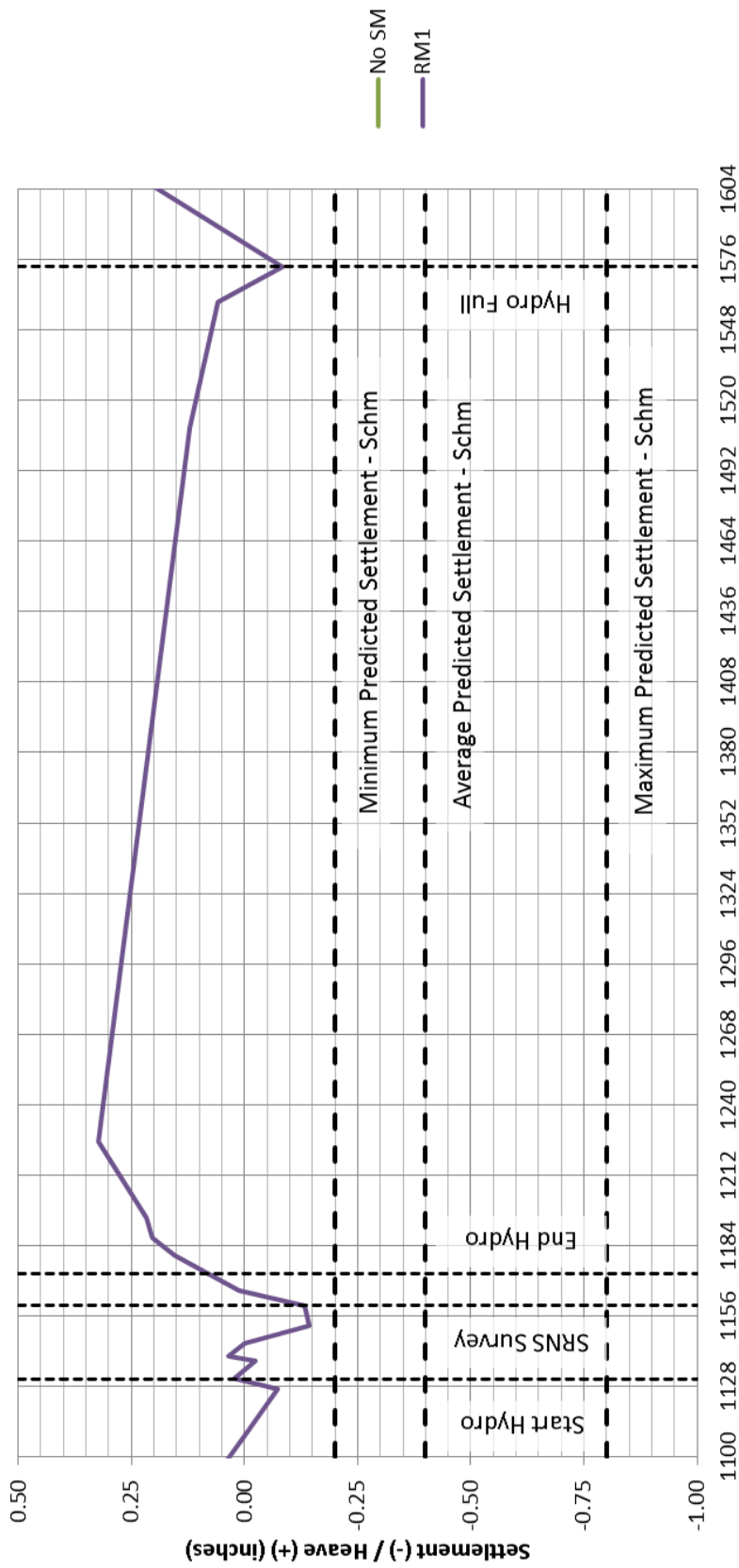
Figure 10: Perimeter Roof Marker Movements during the Initial Leak Test

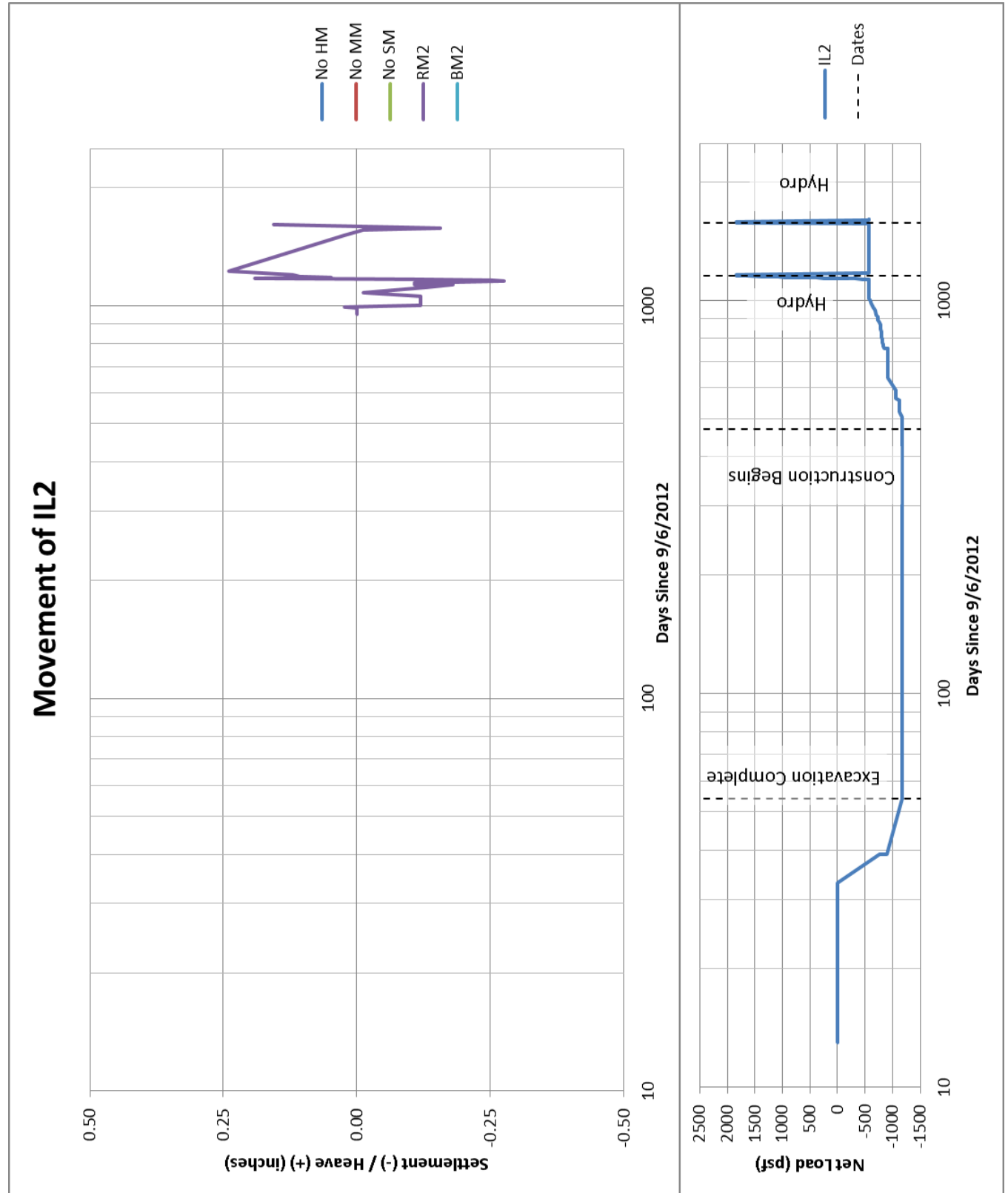
**Appendix A – Paired Settlement Marker Graphs**

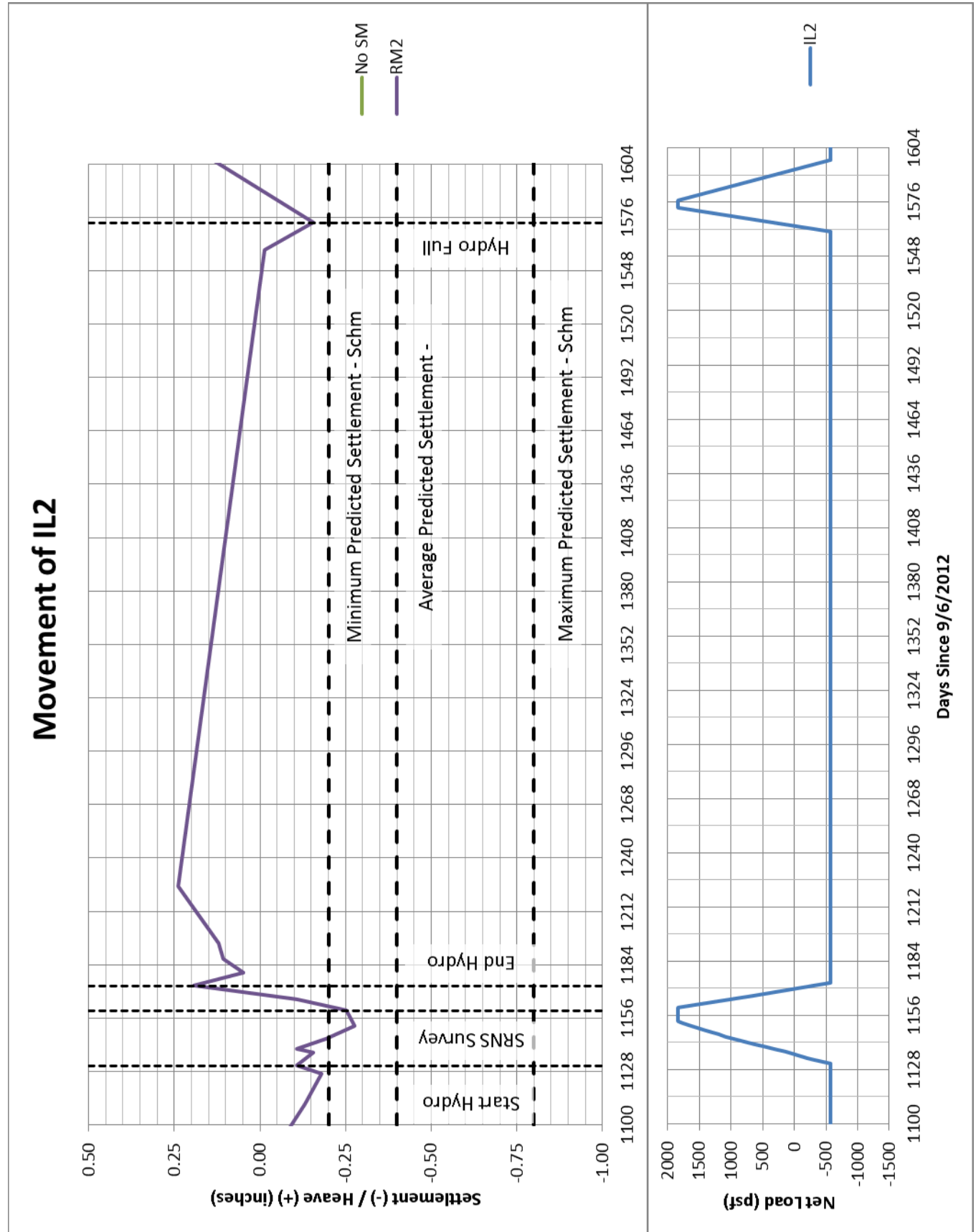
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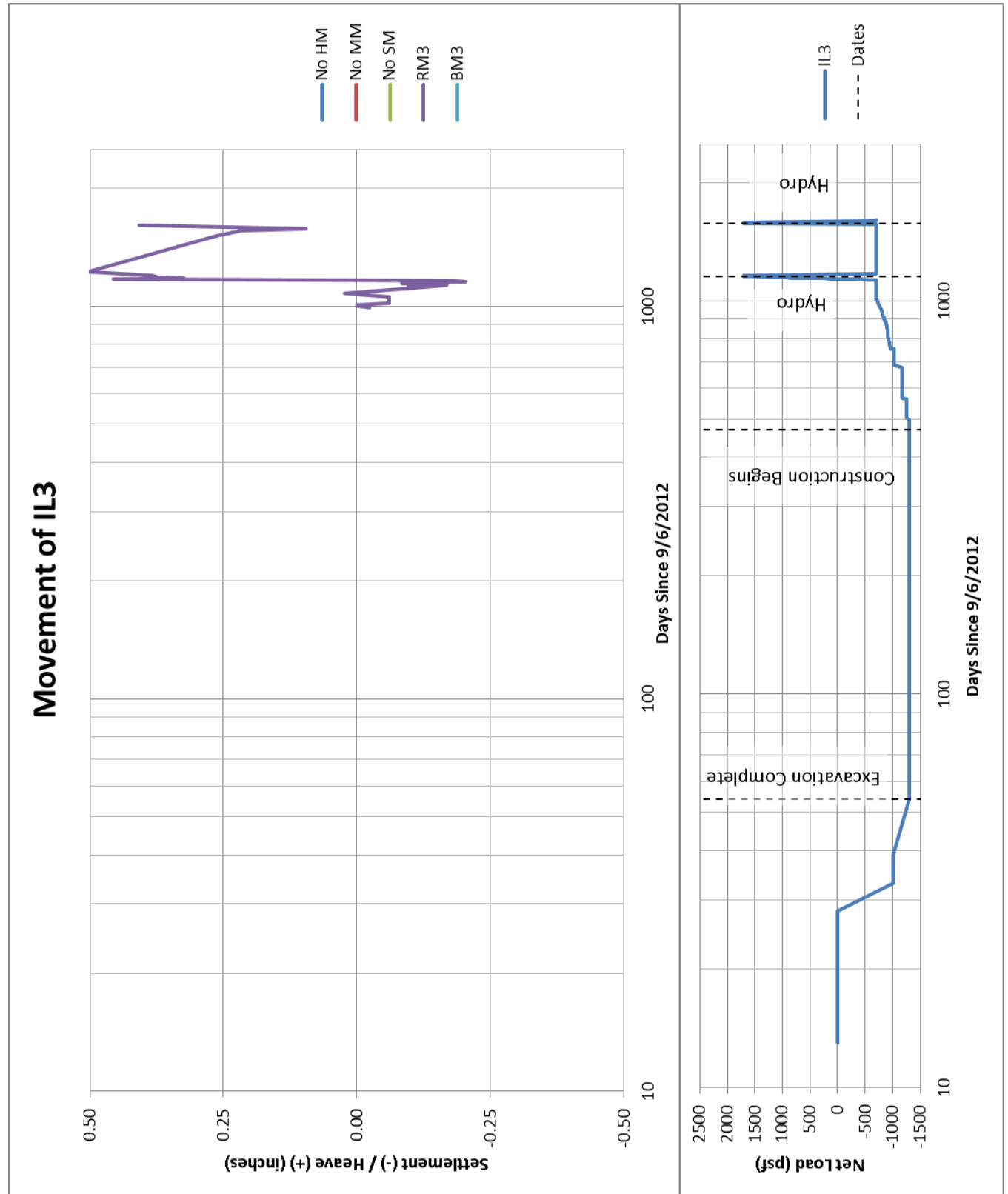


### Movement of IL1

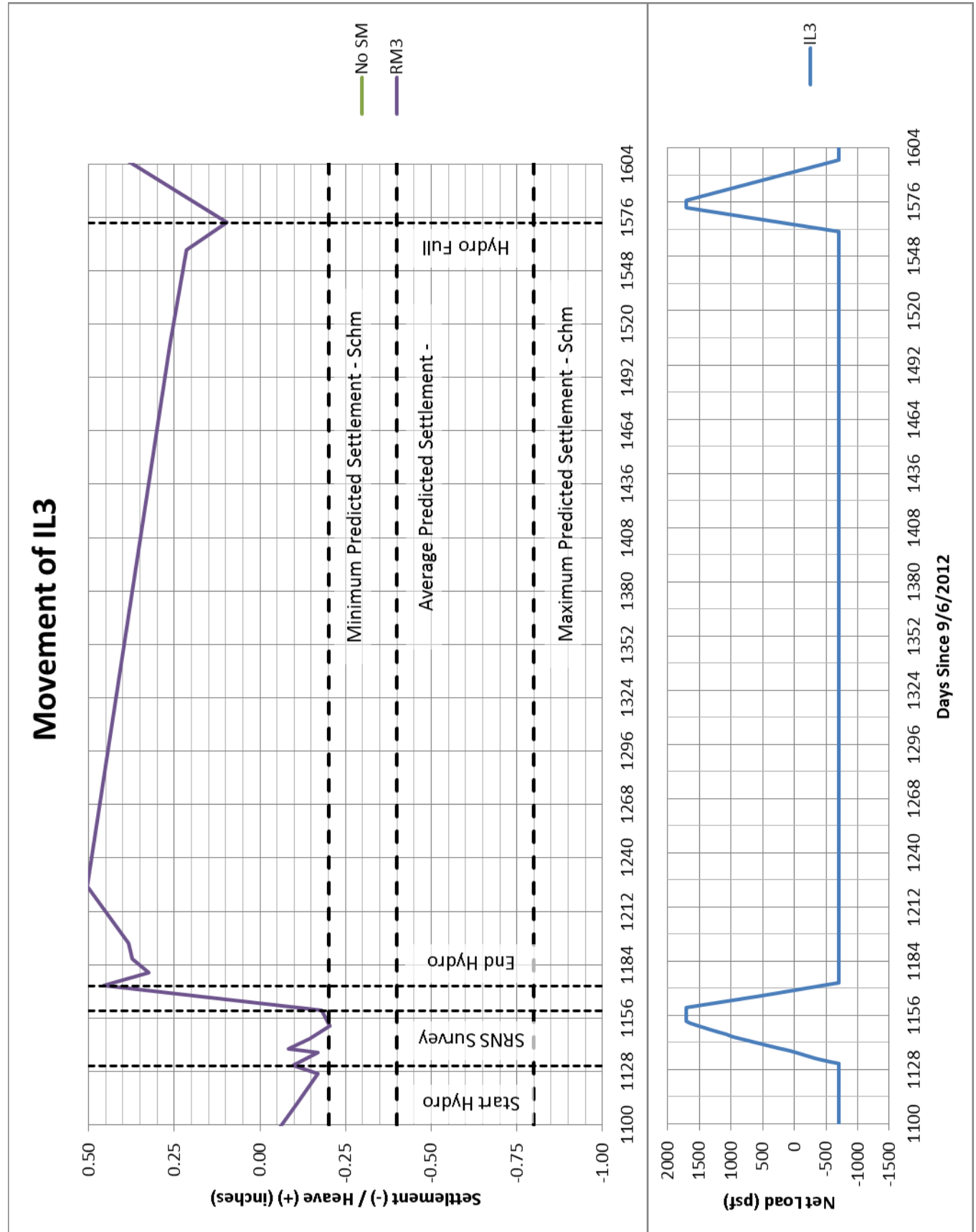


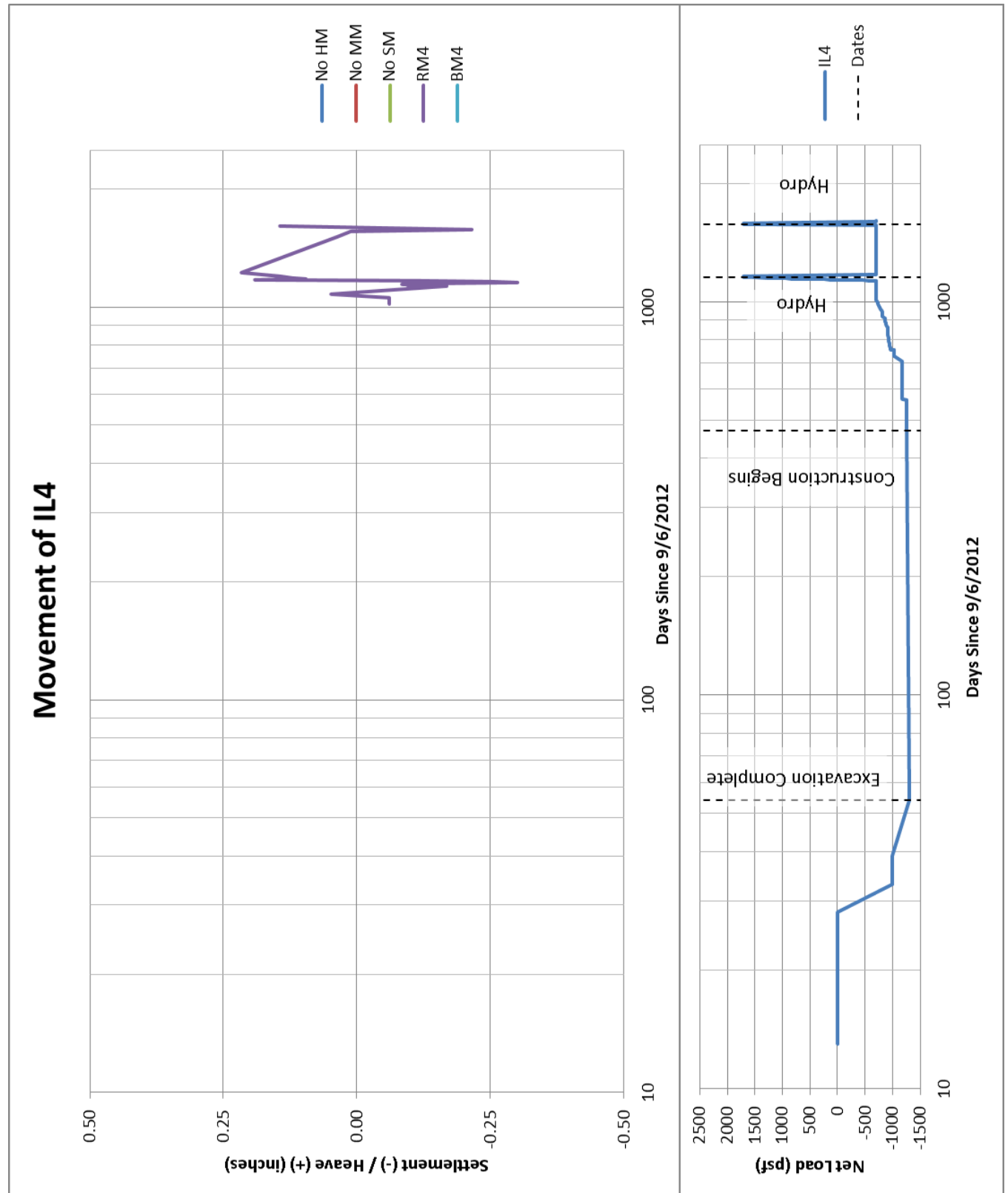


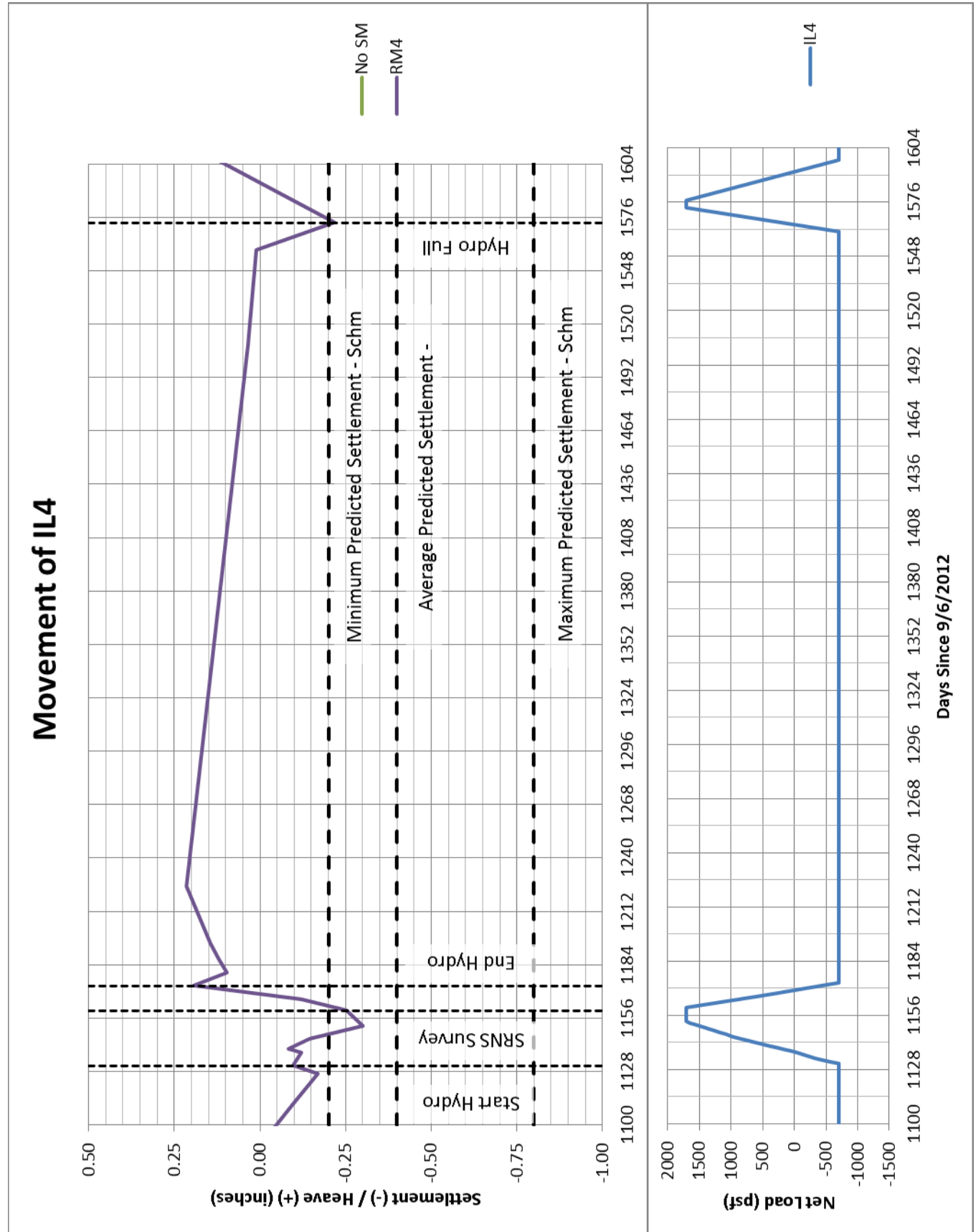


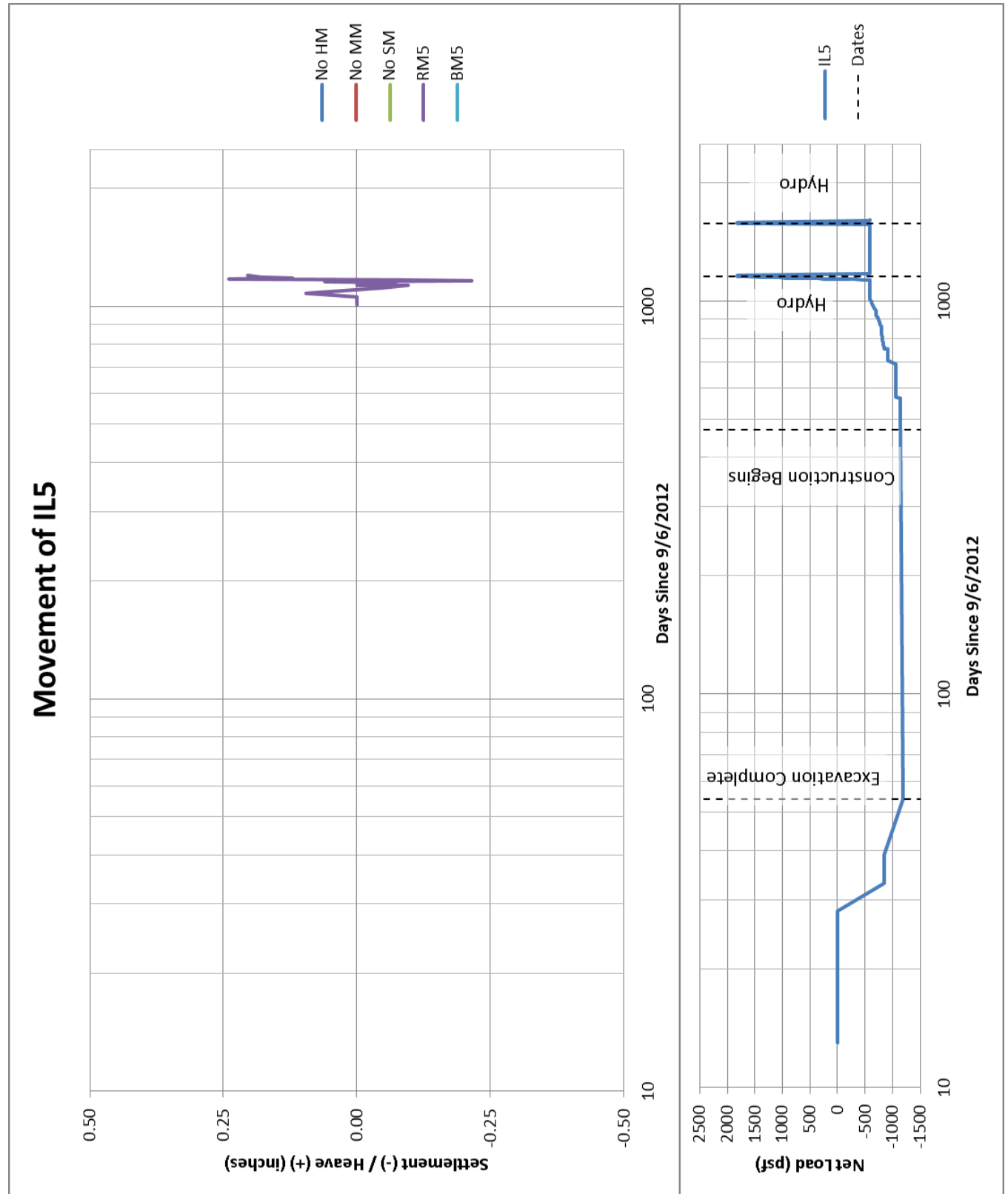




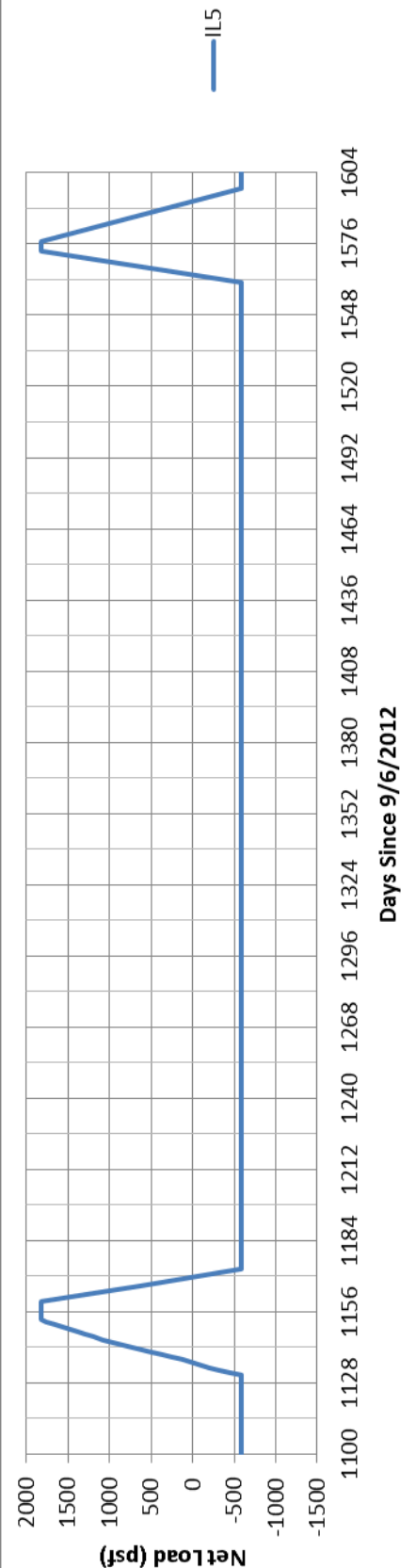
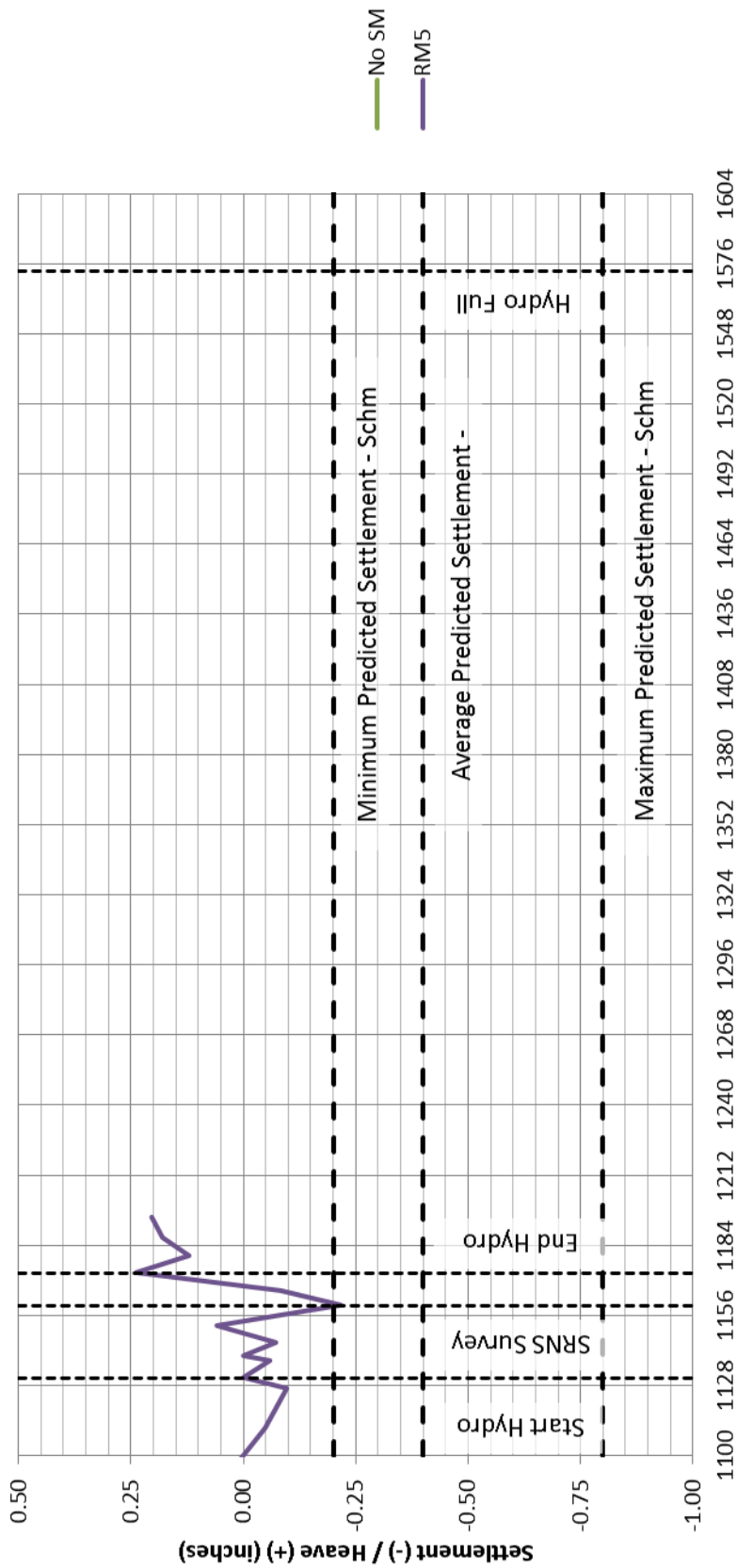


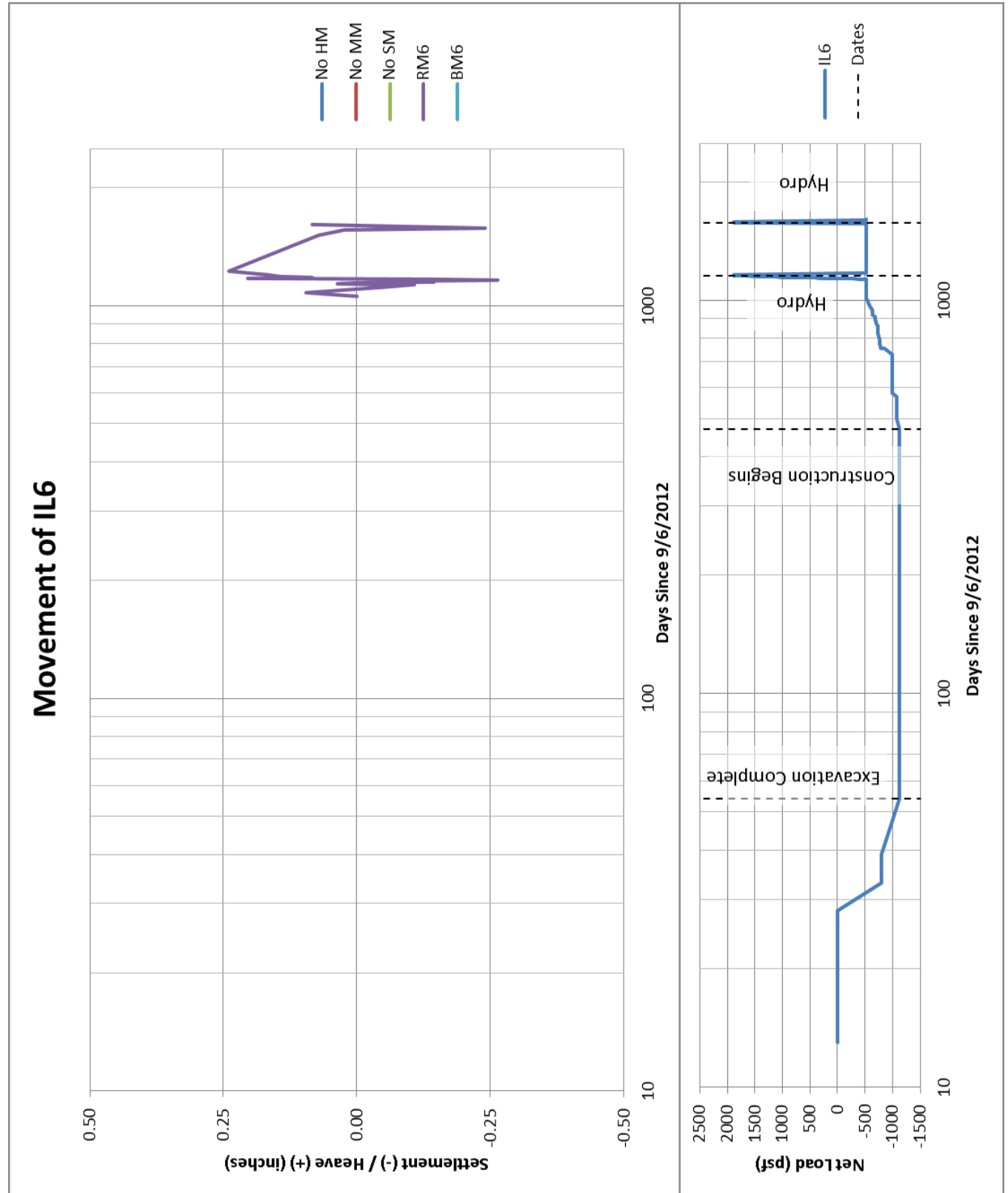


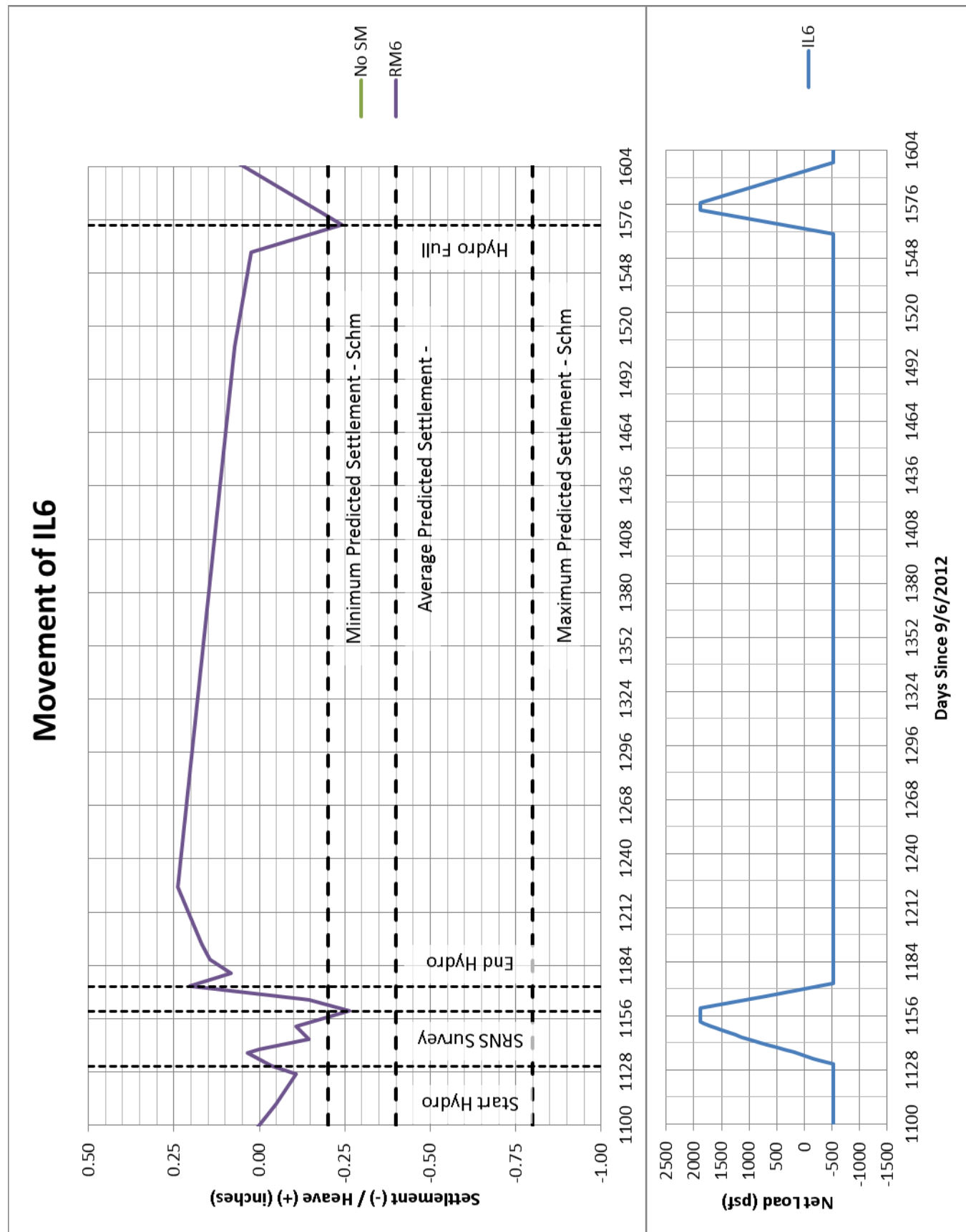


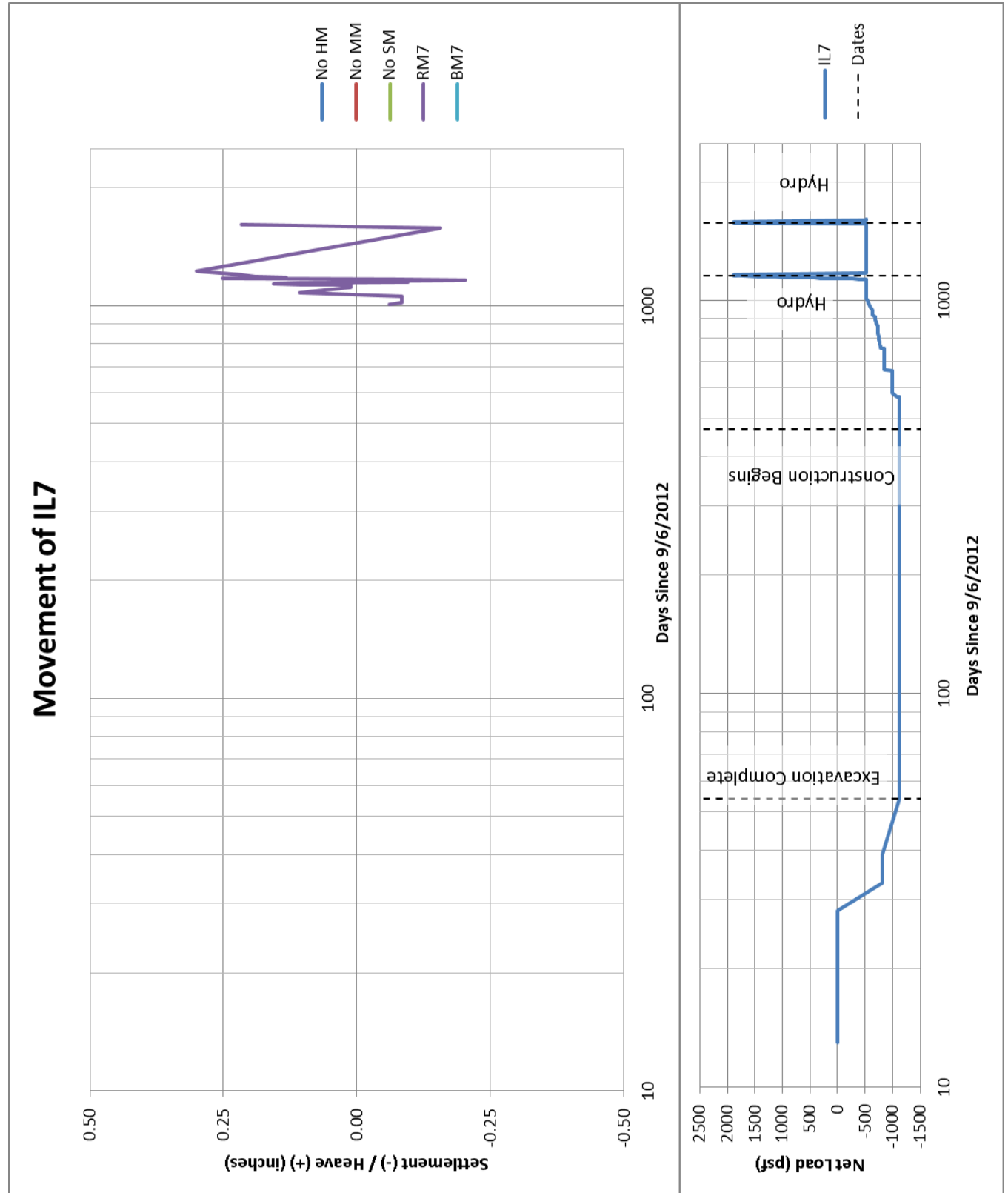


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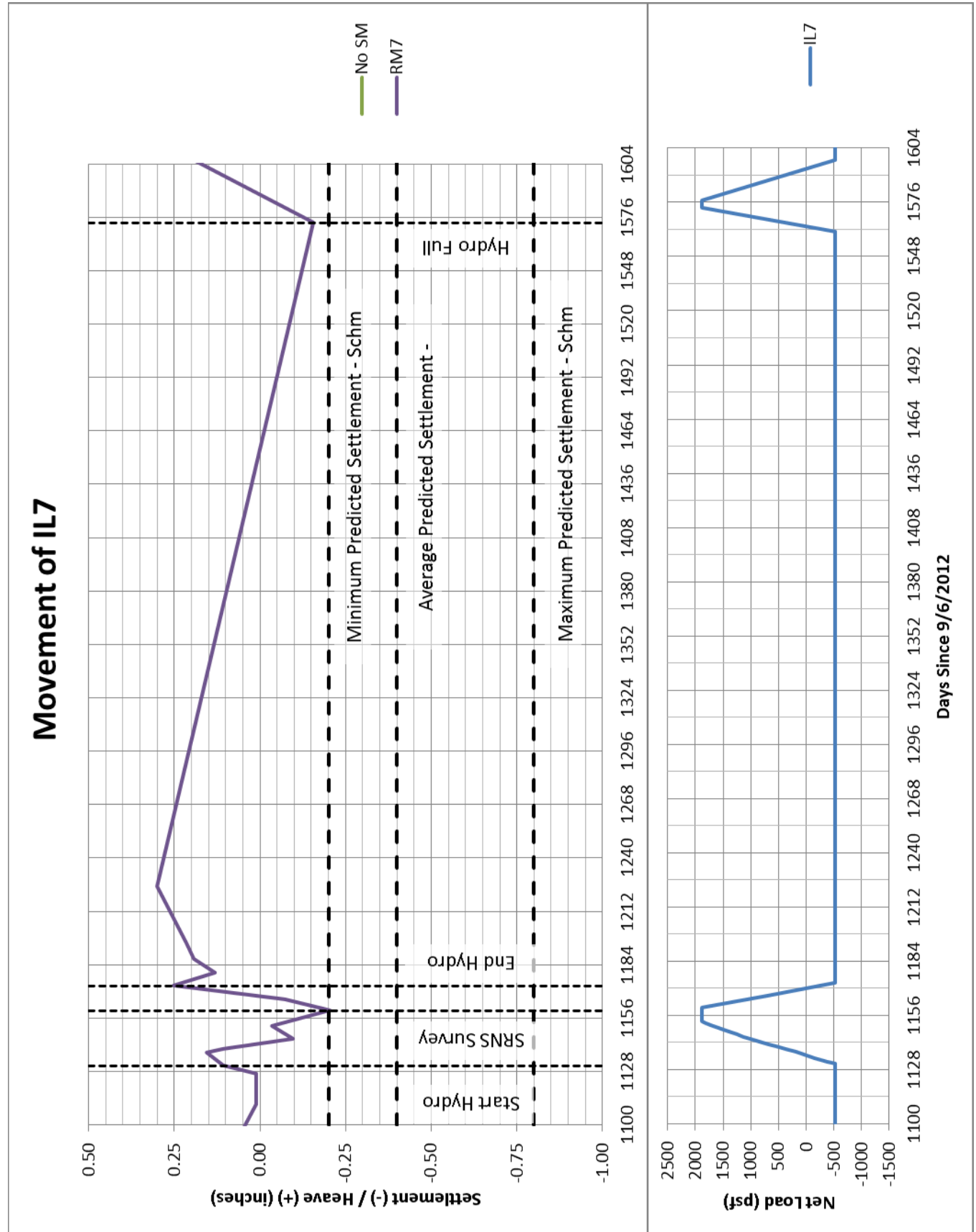


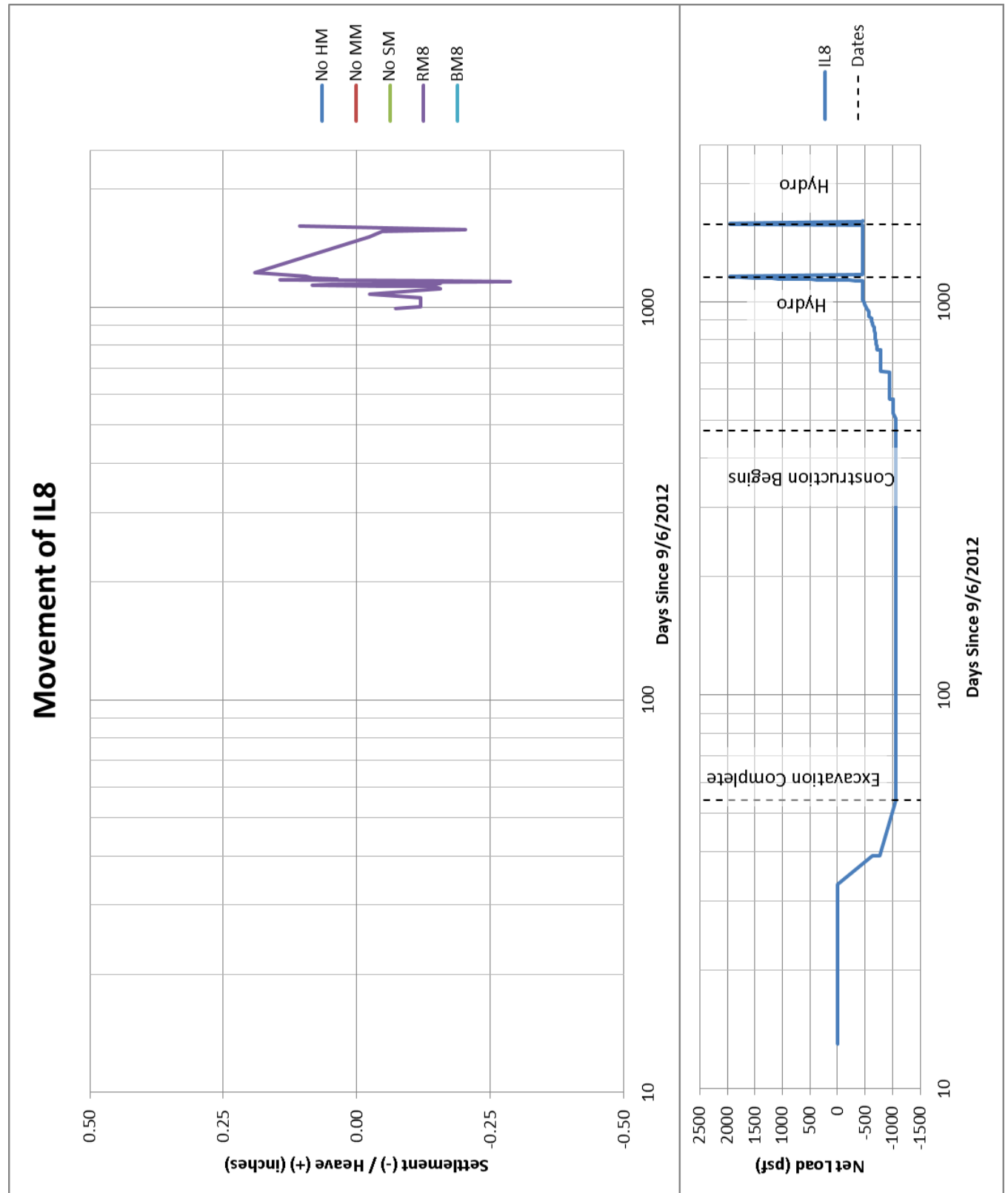


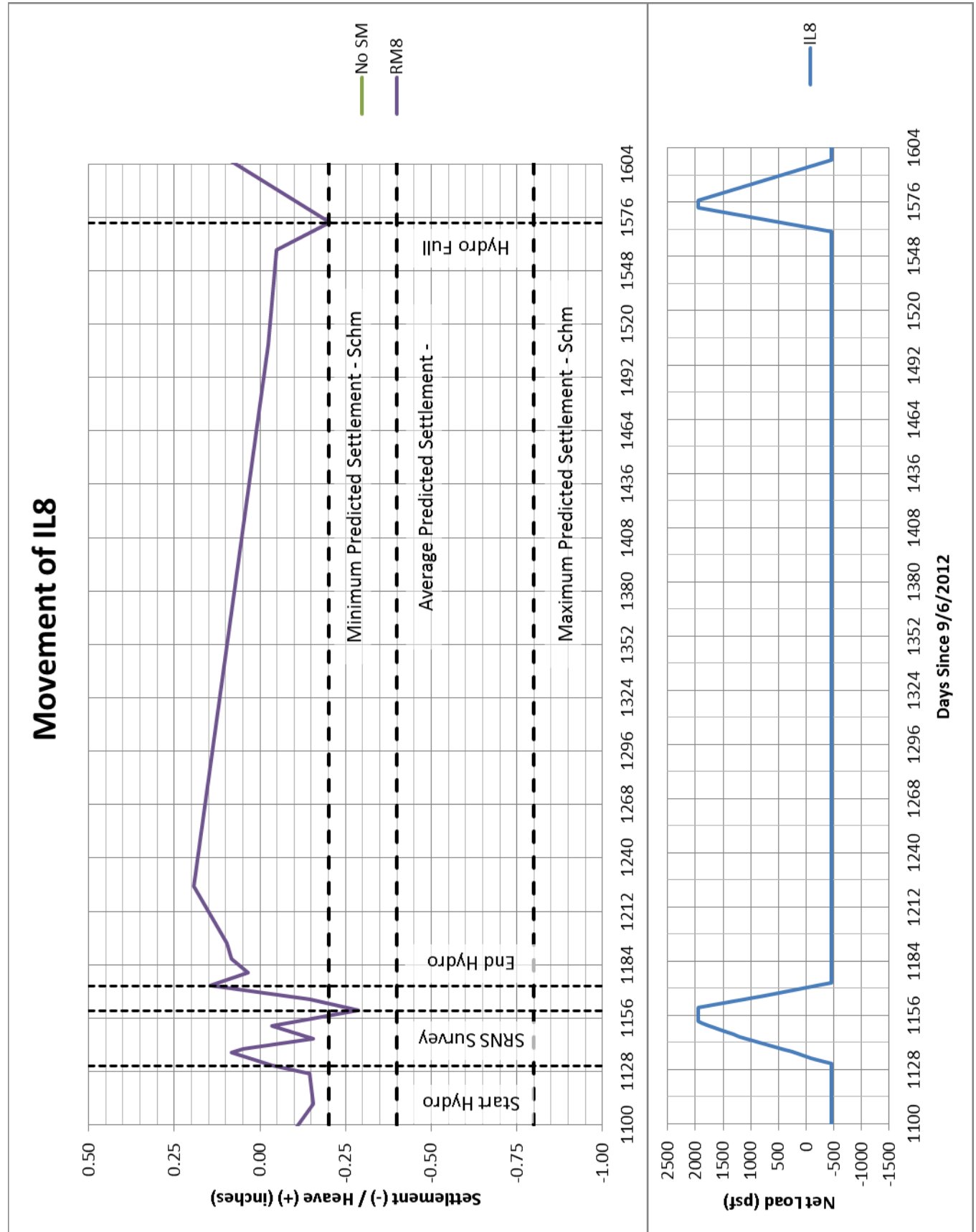


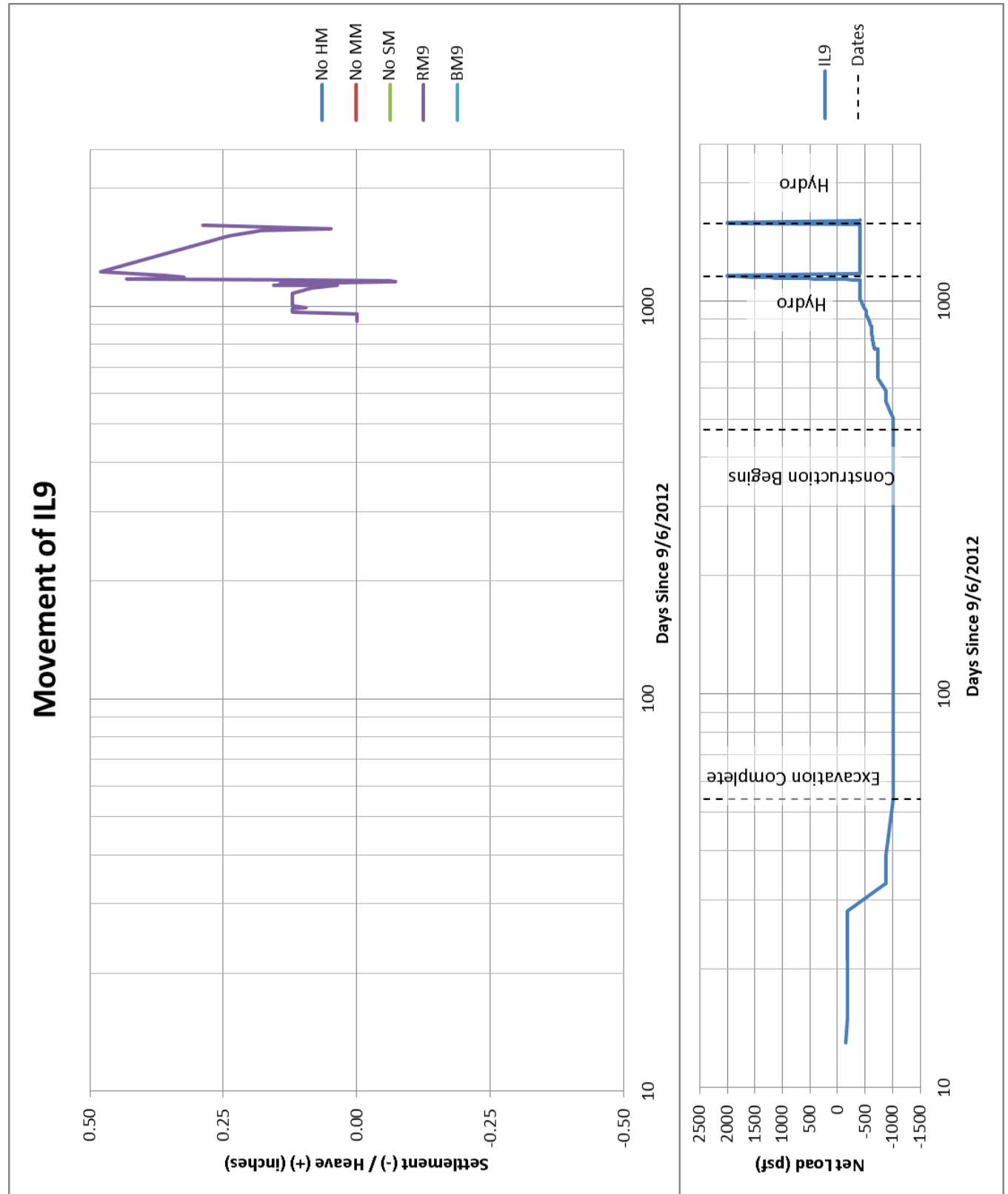


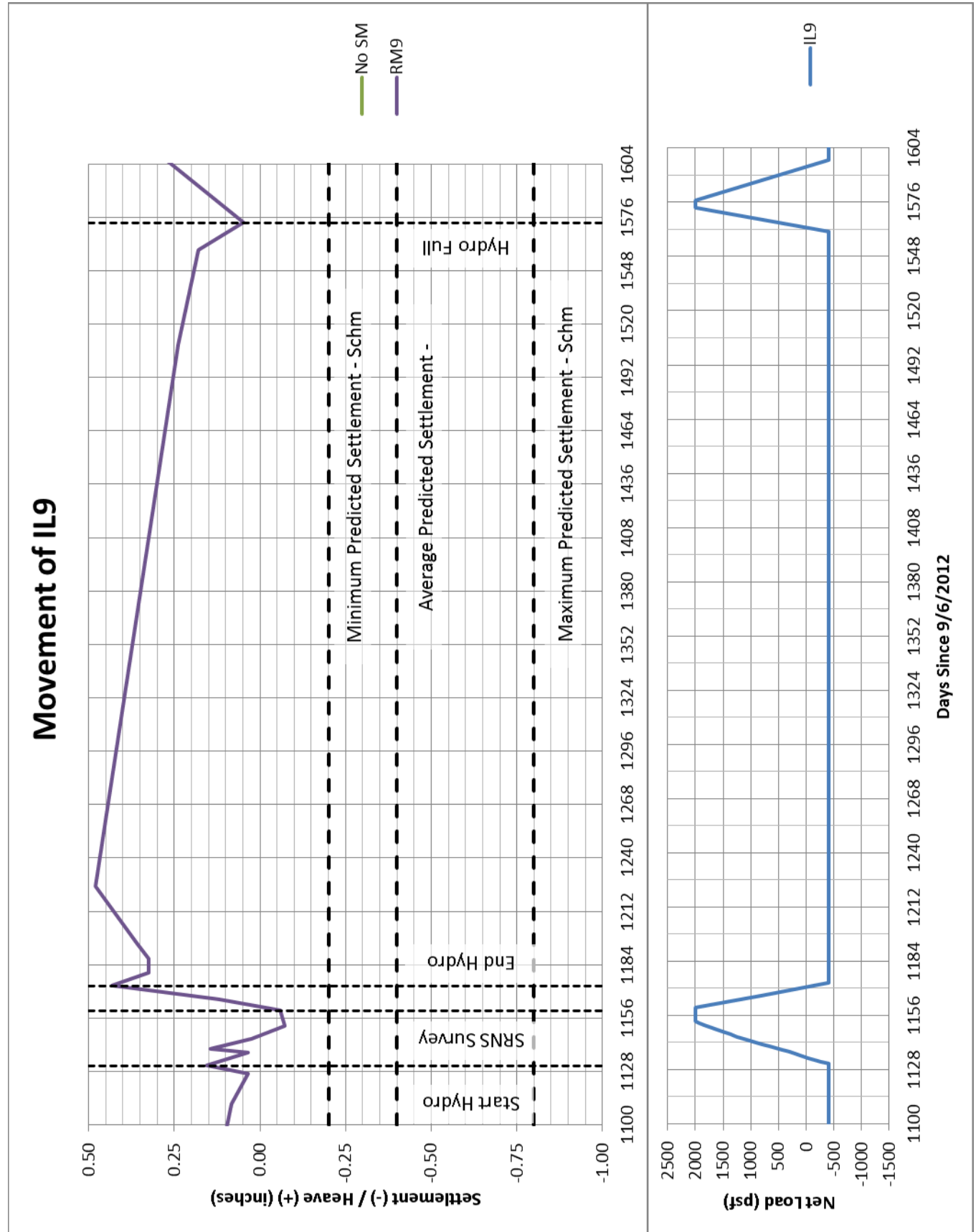


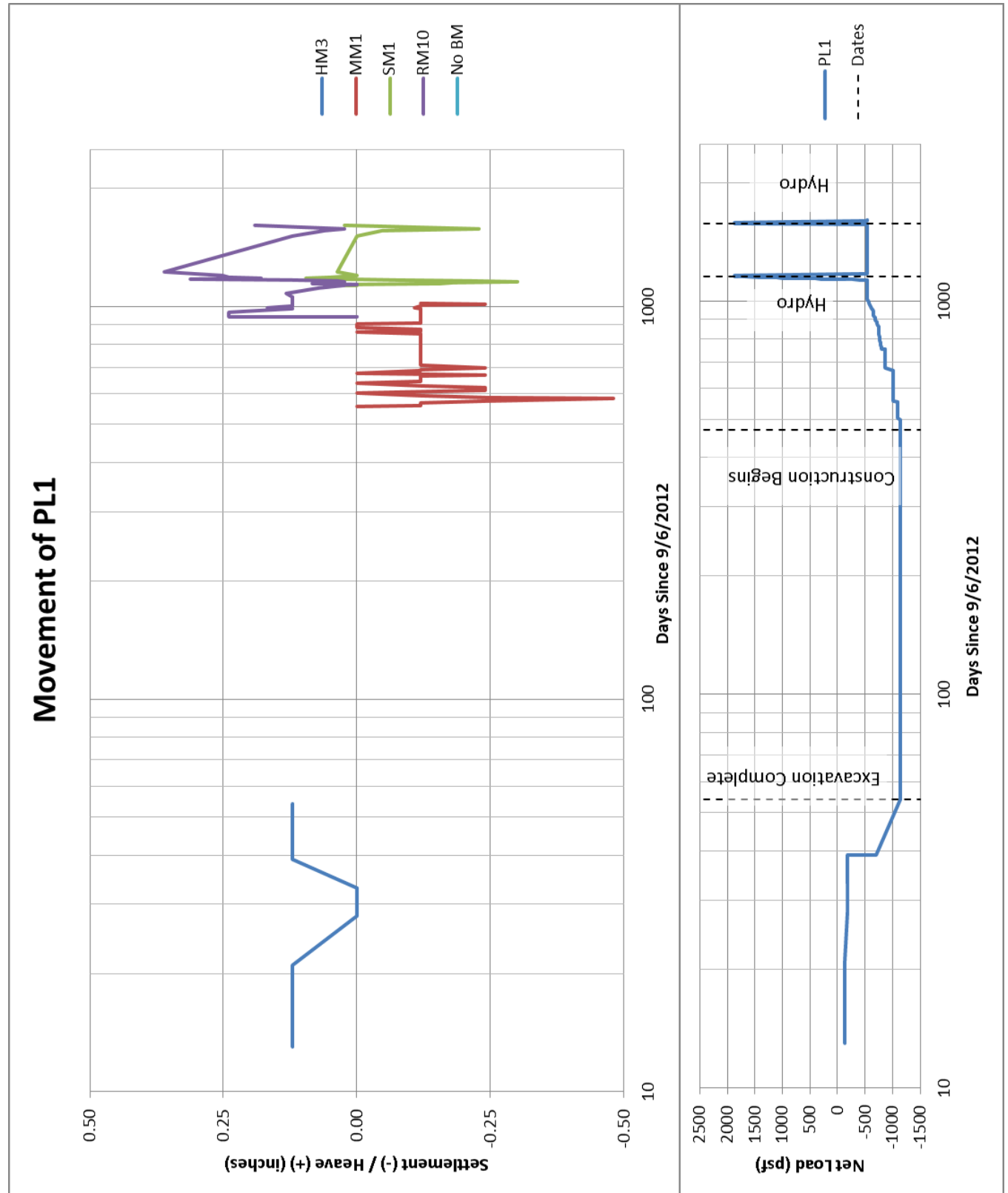


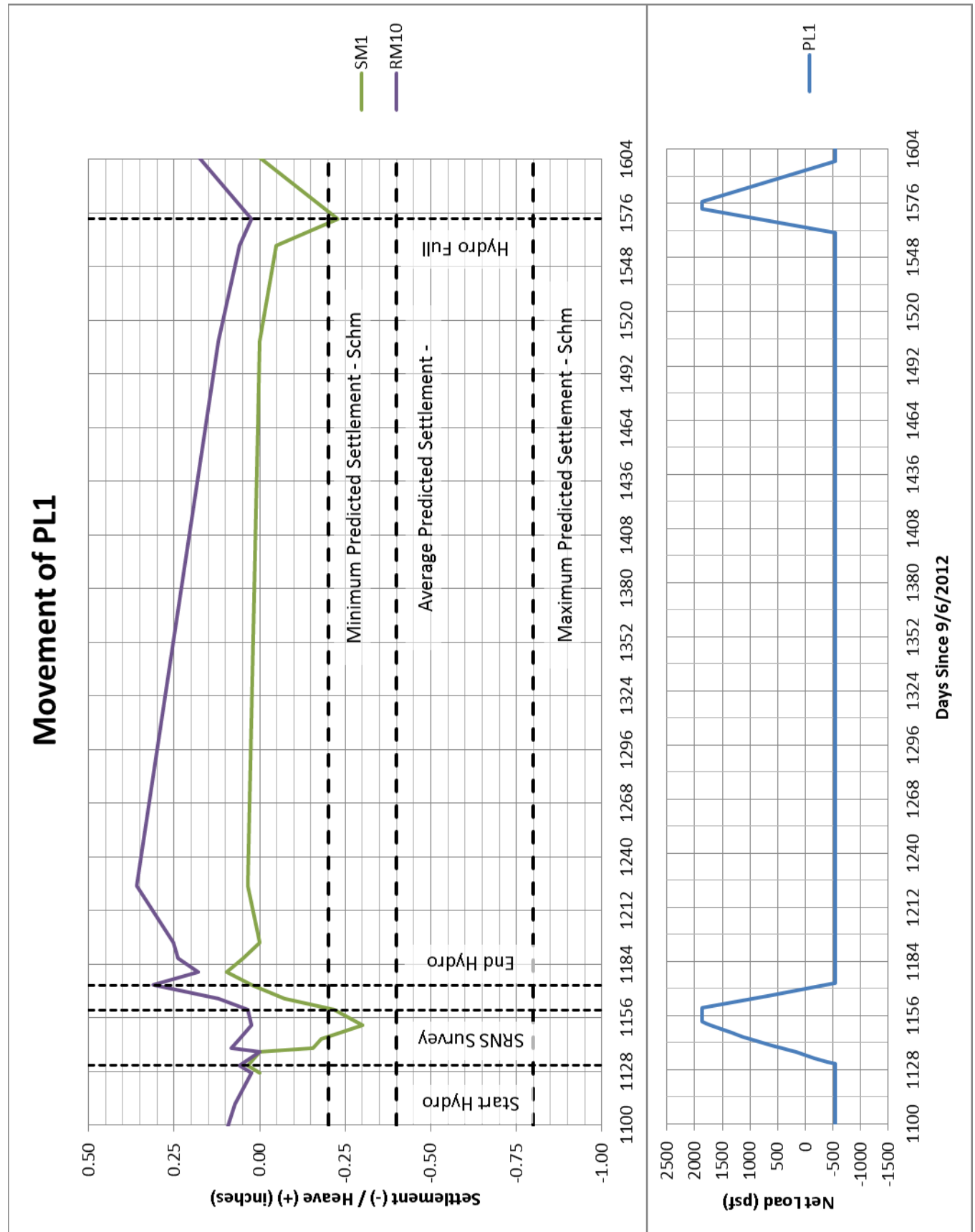


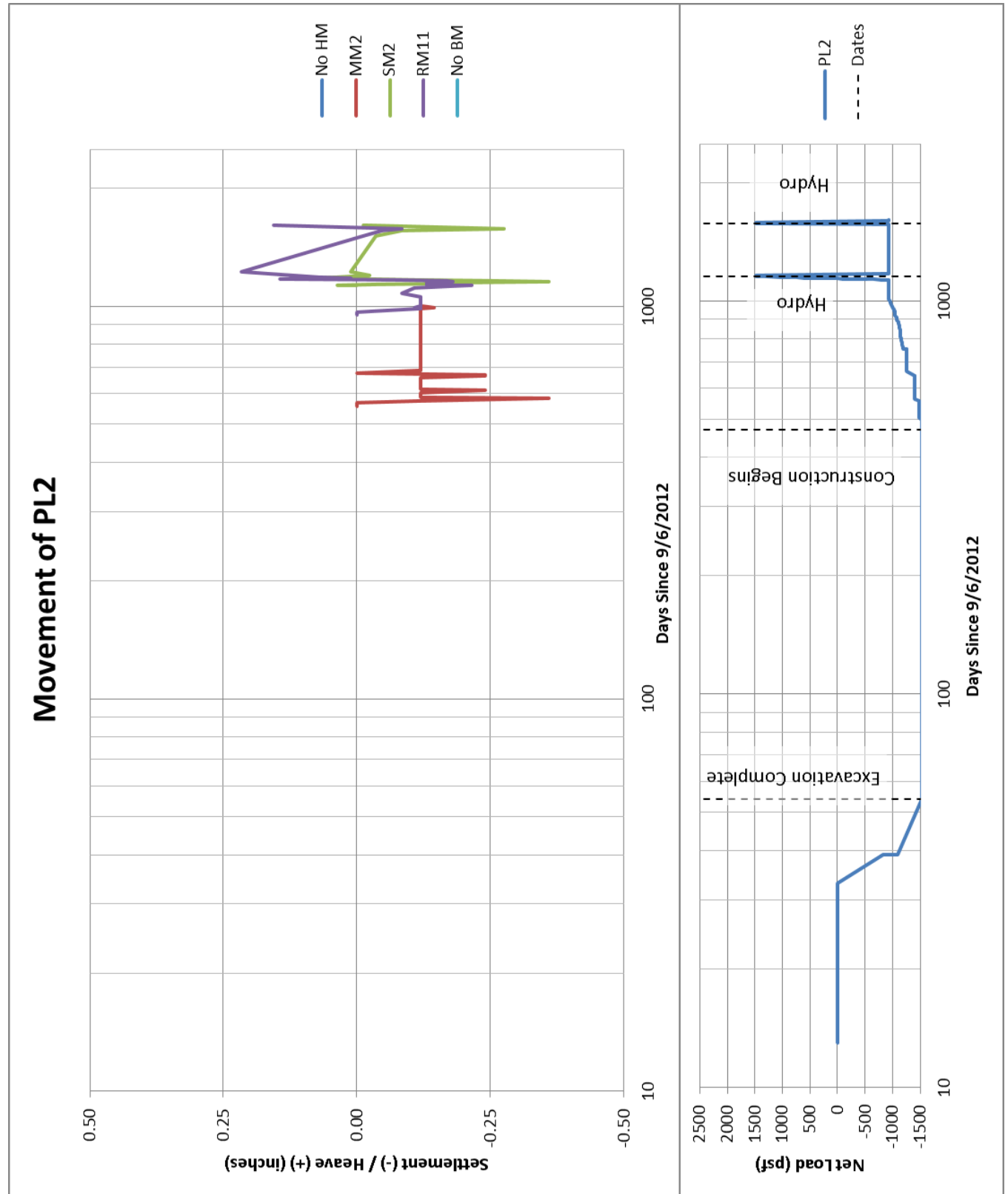




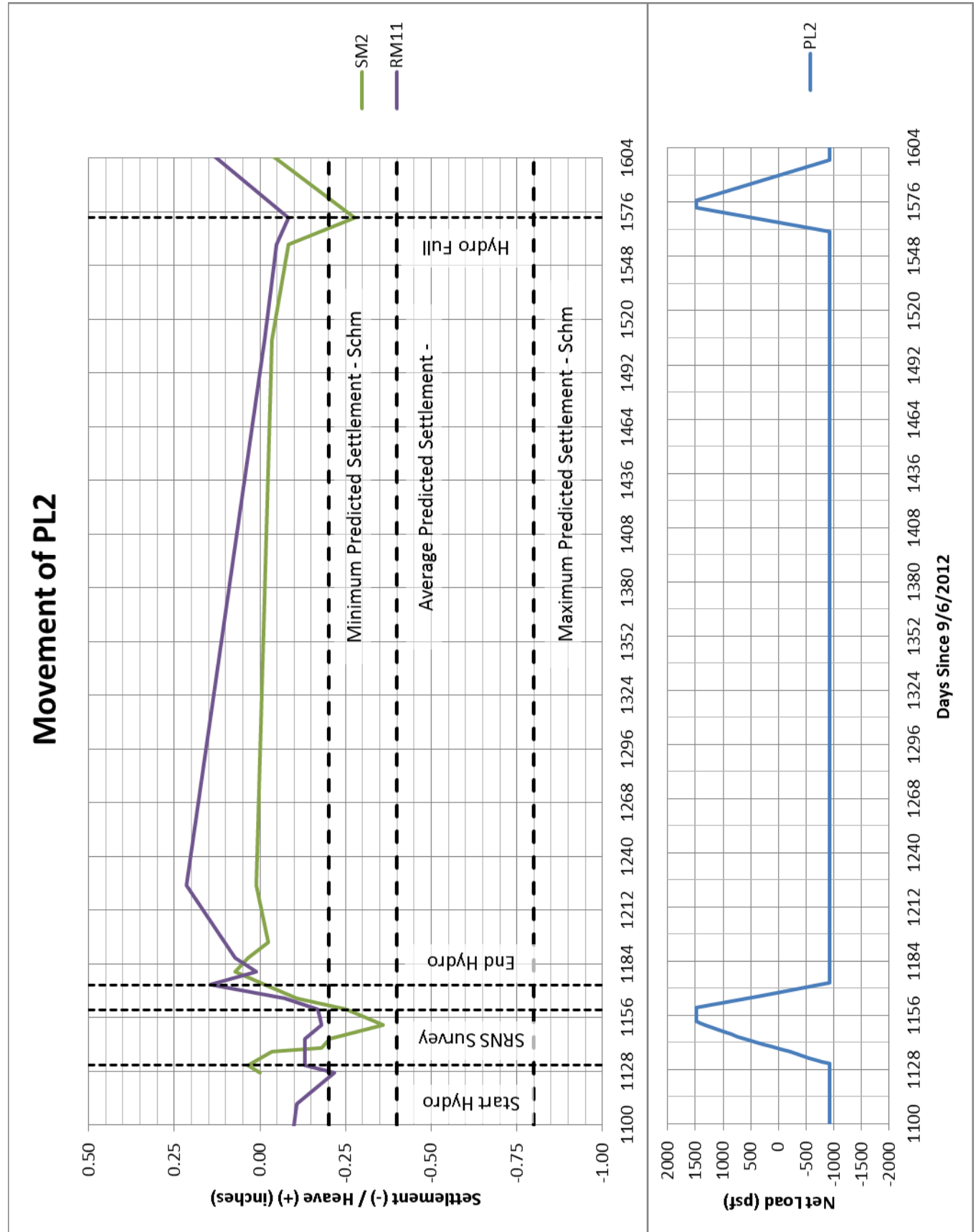


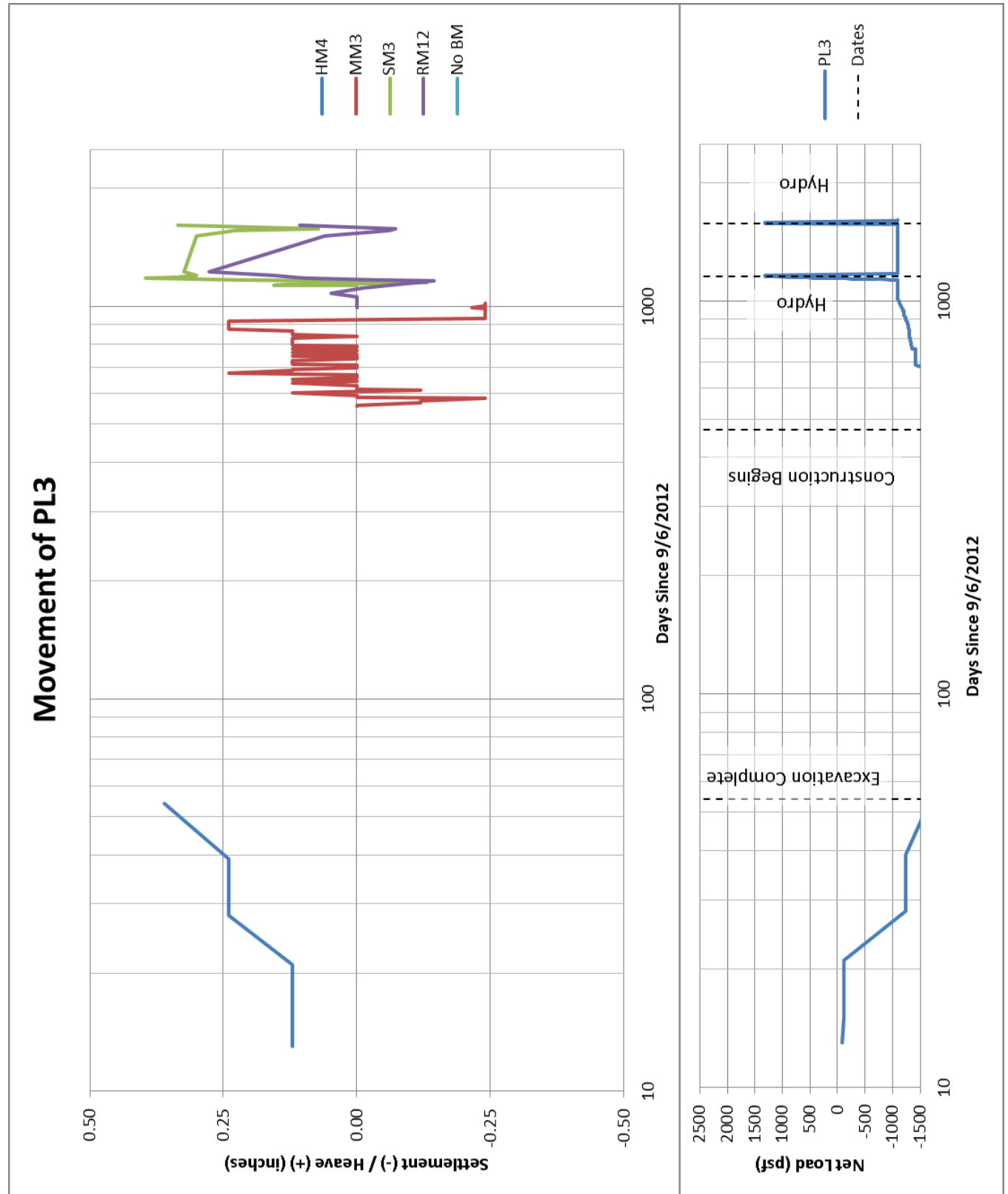


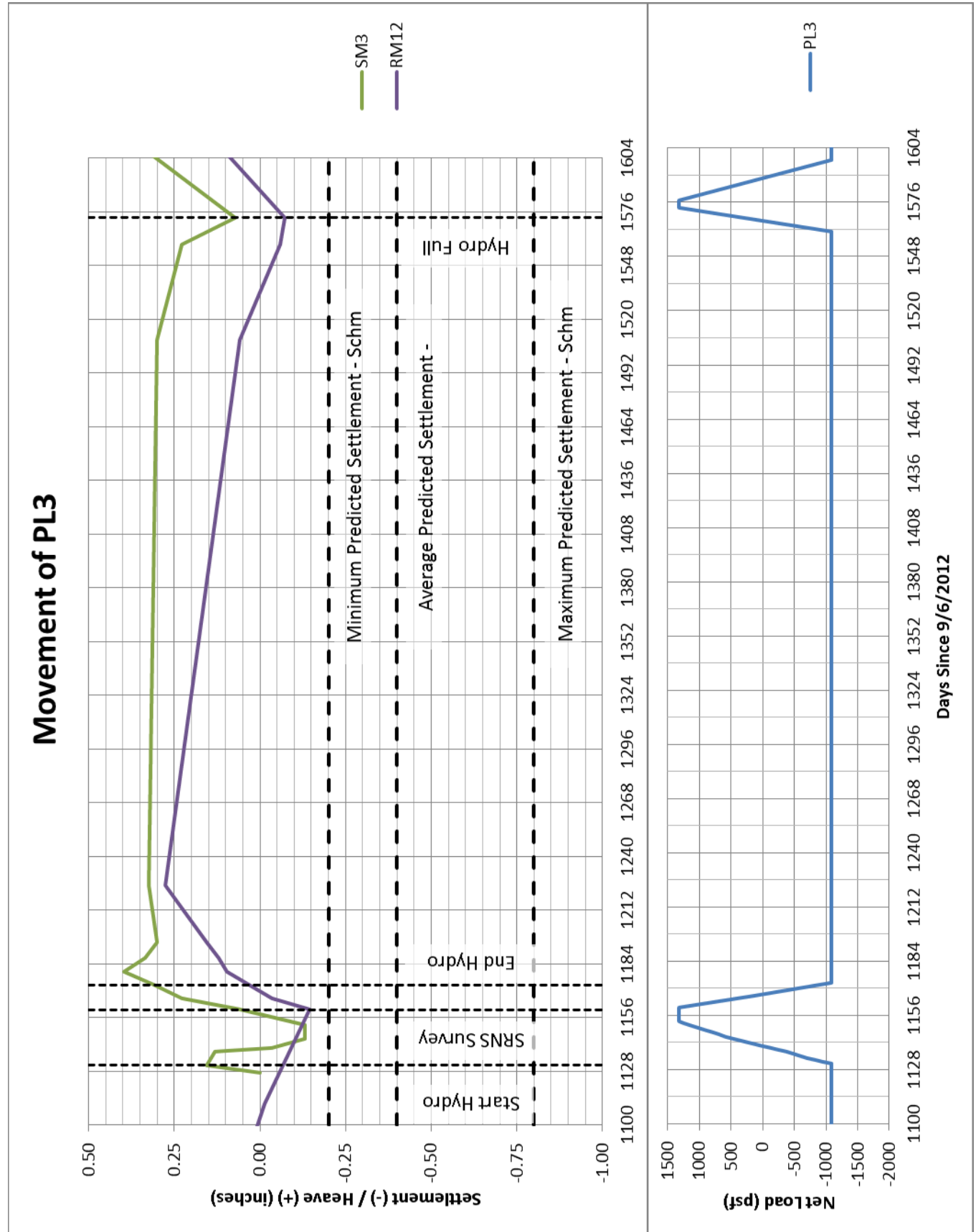


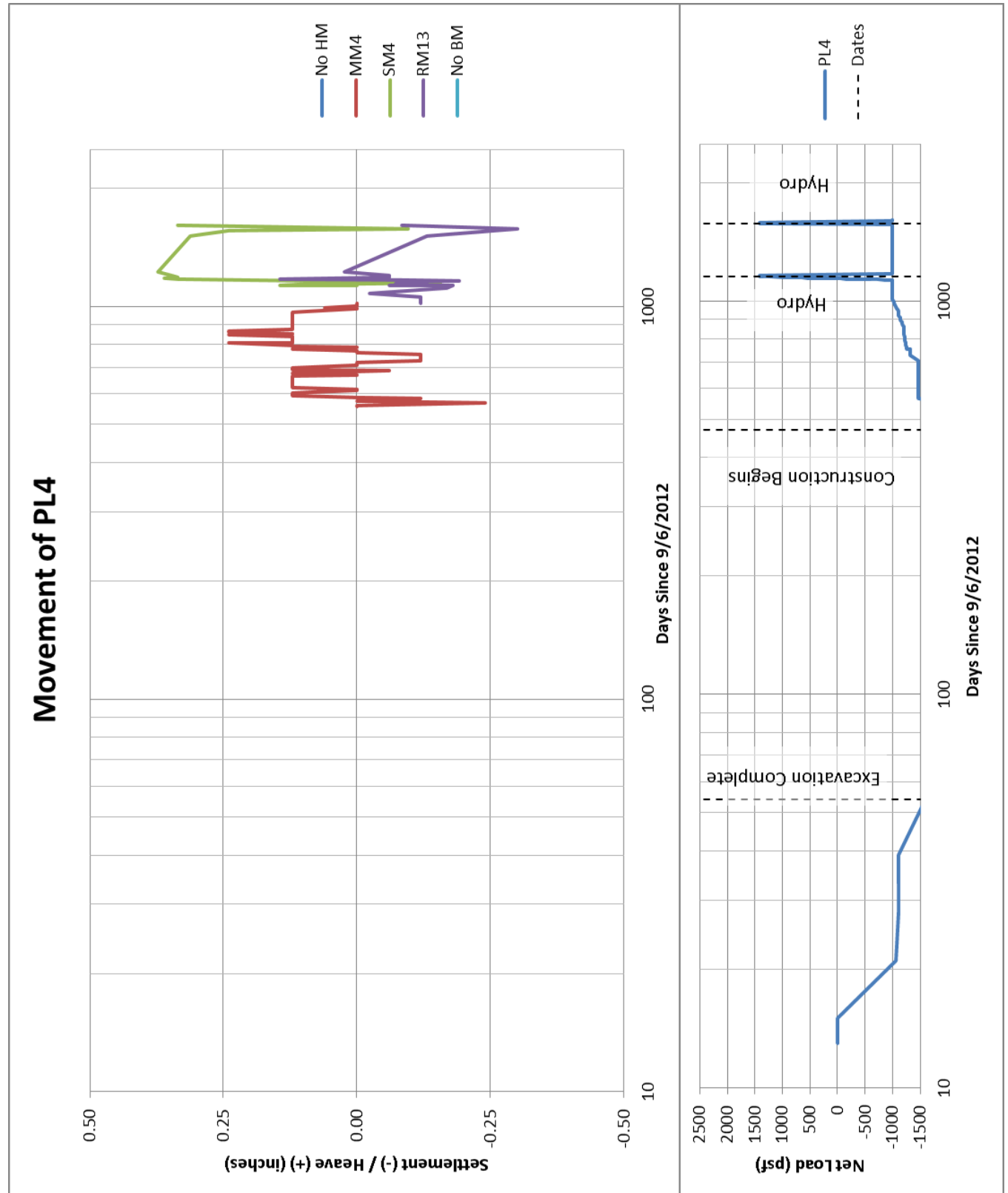


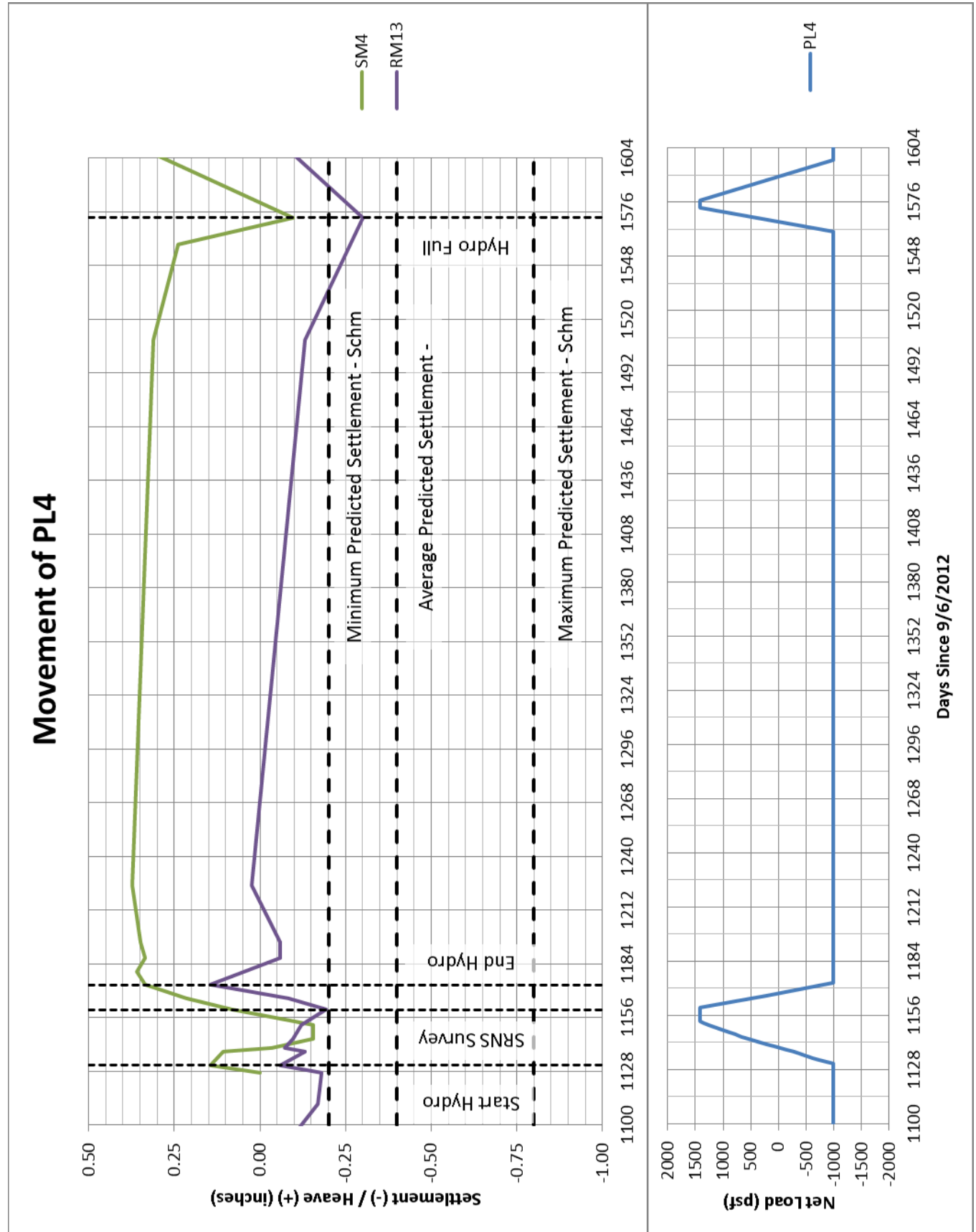


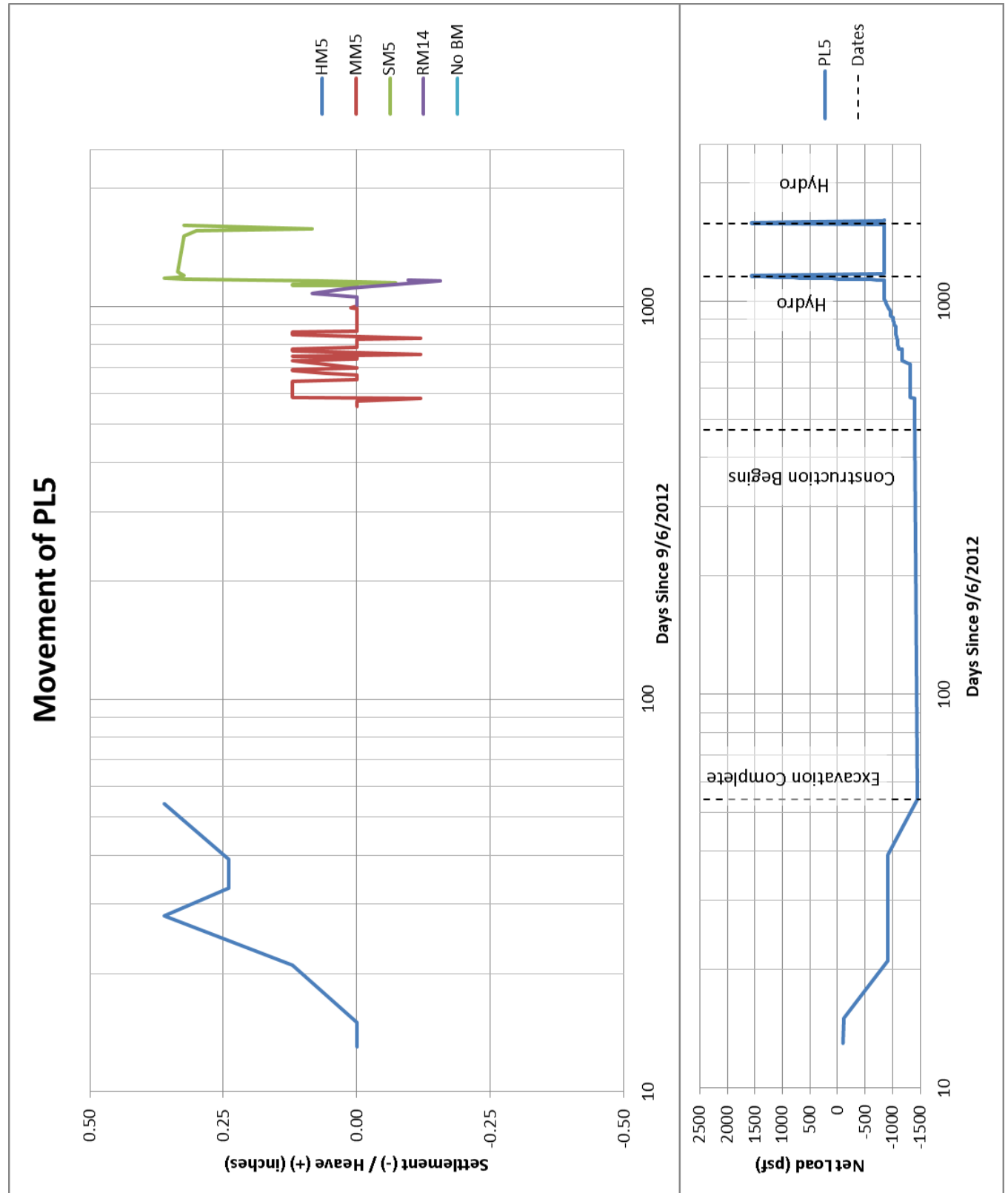


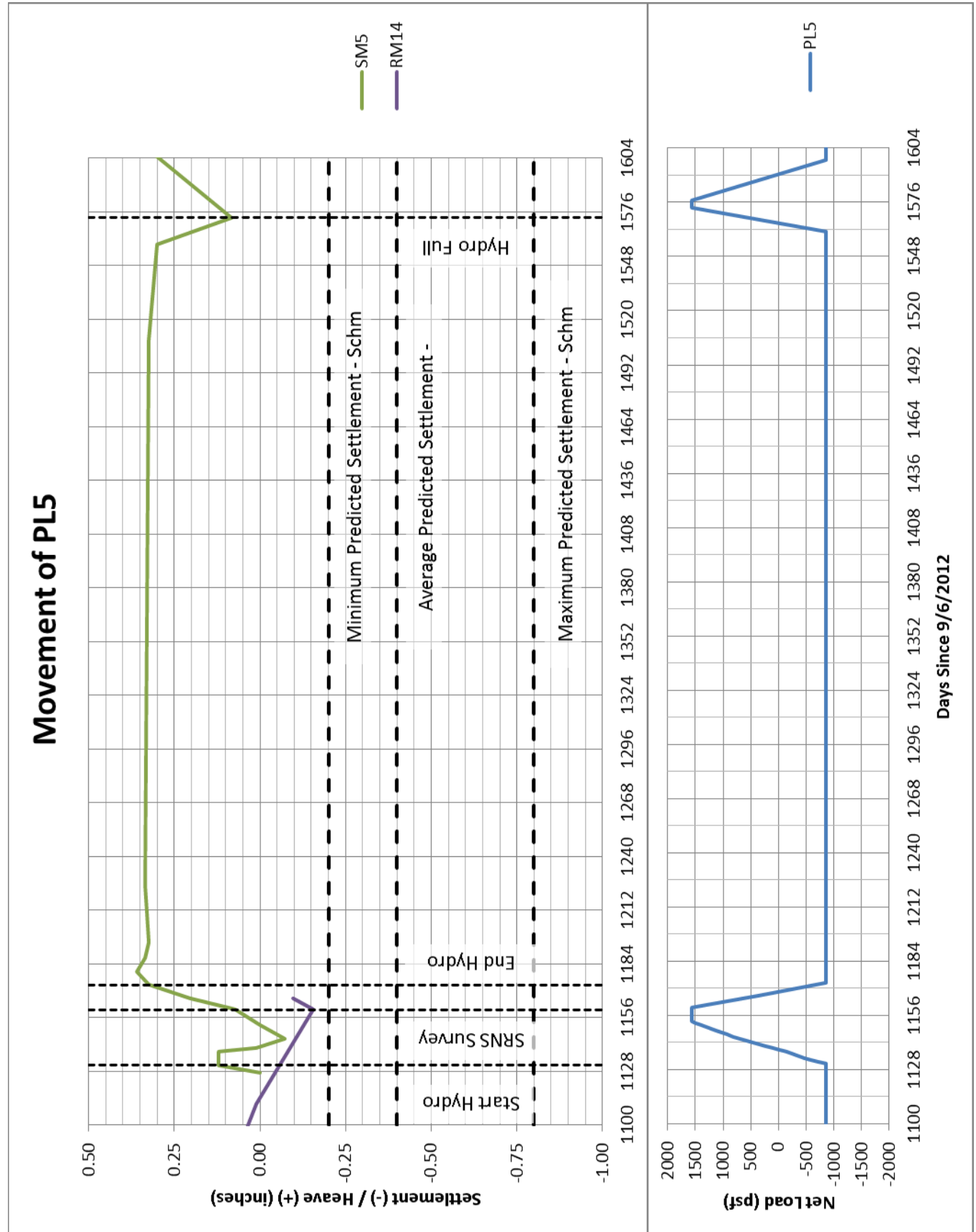


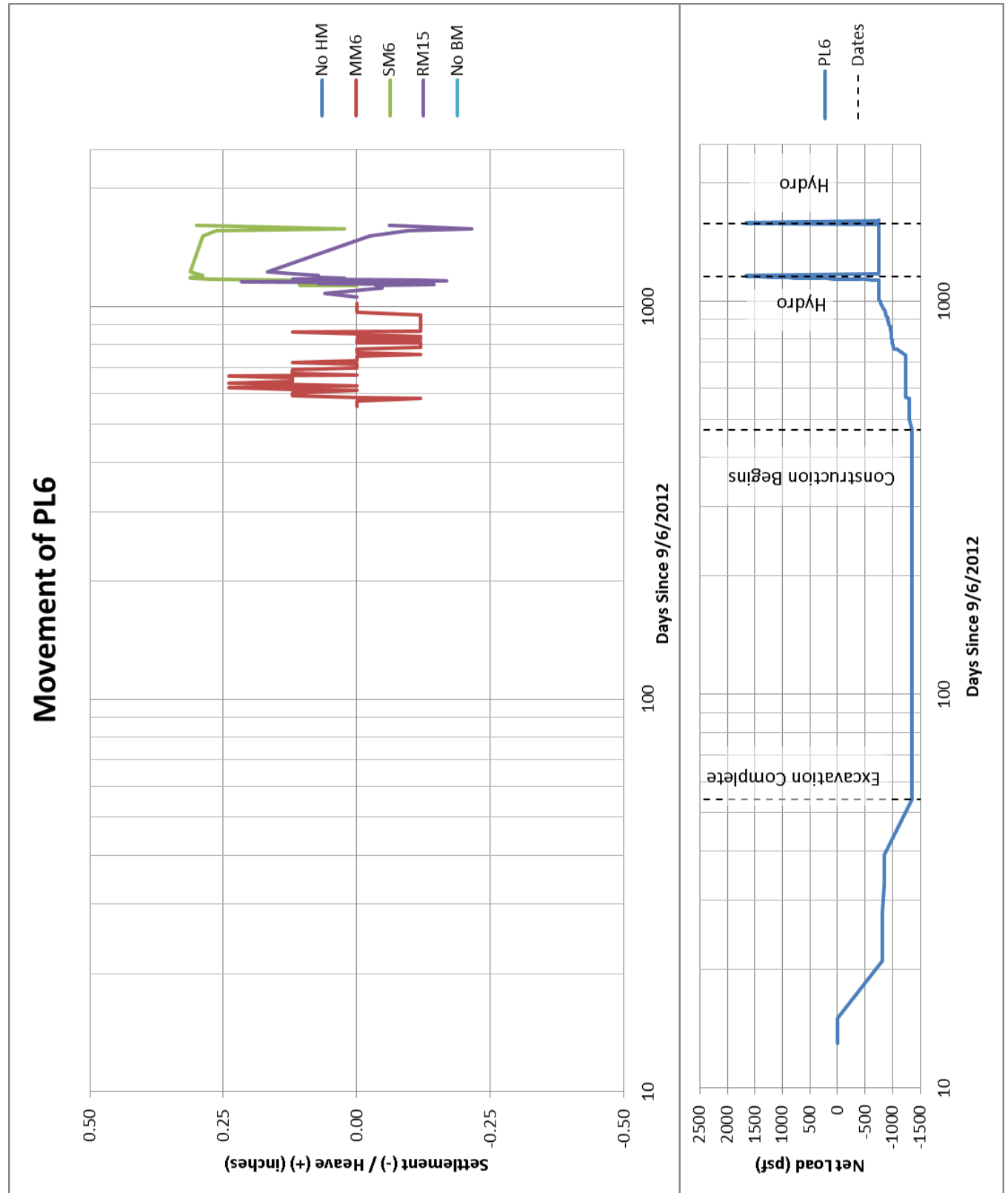




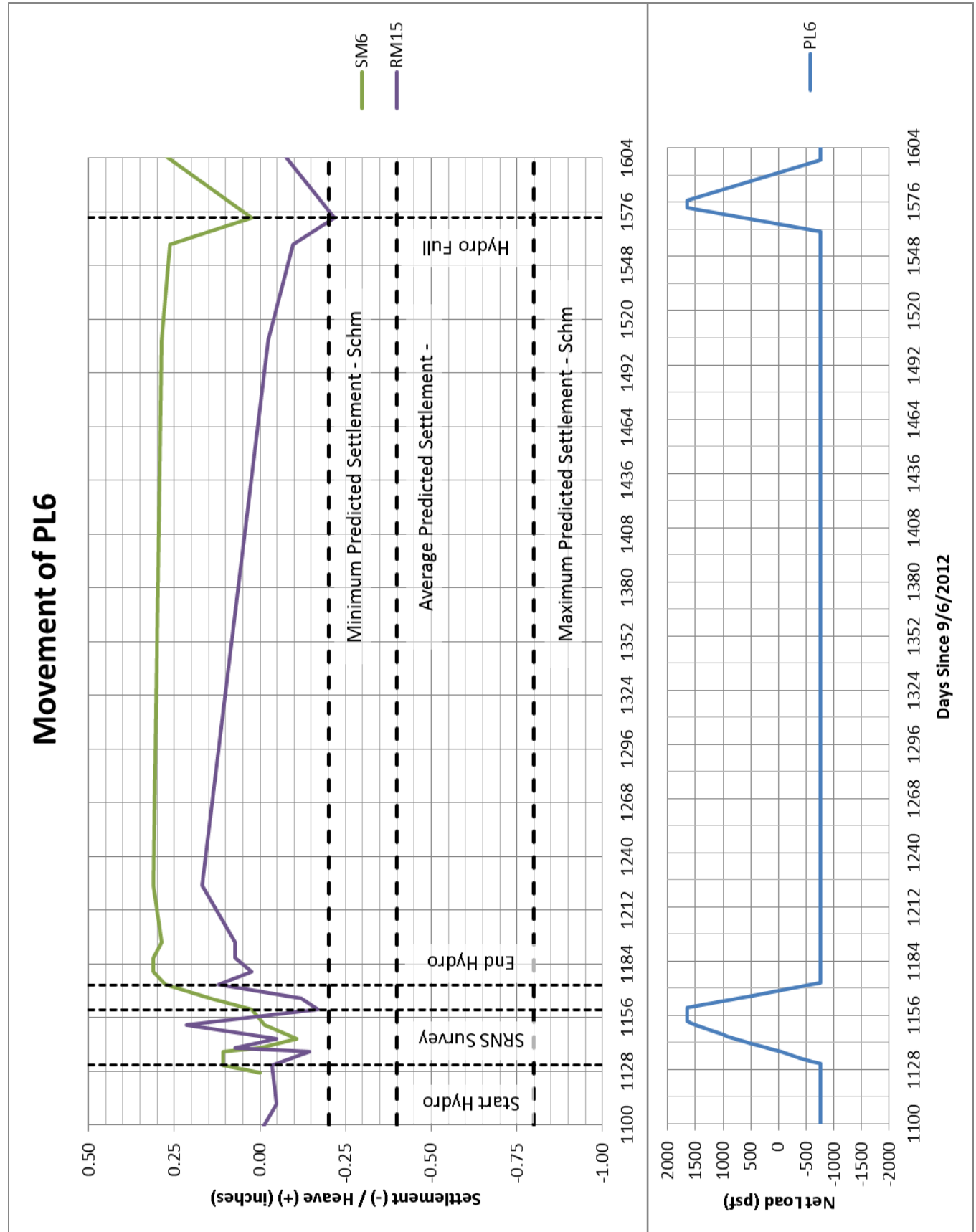


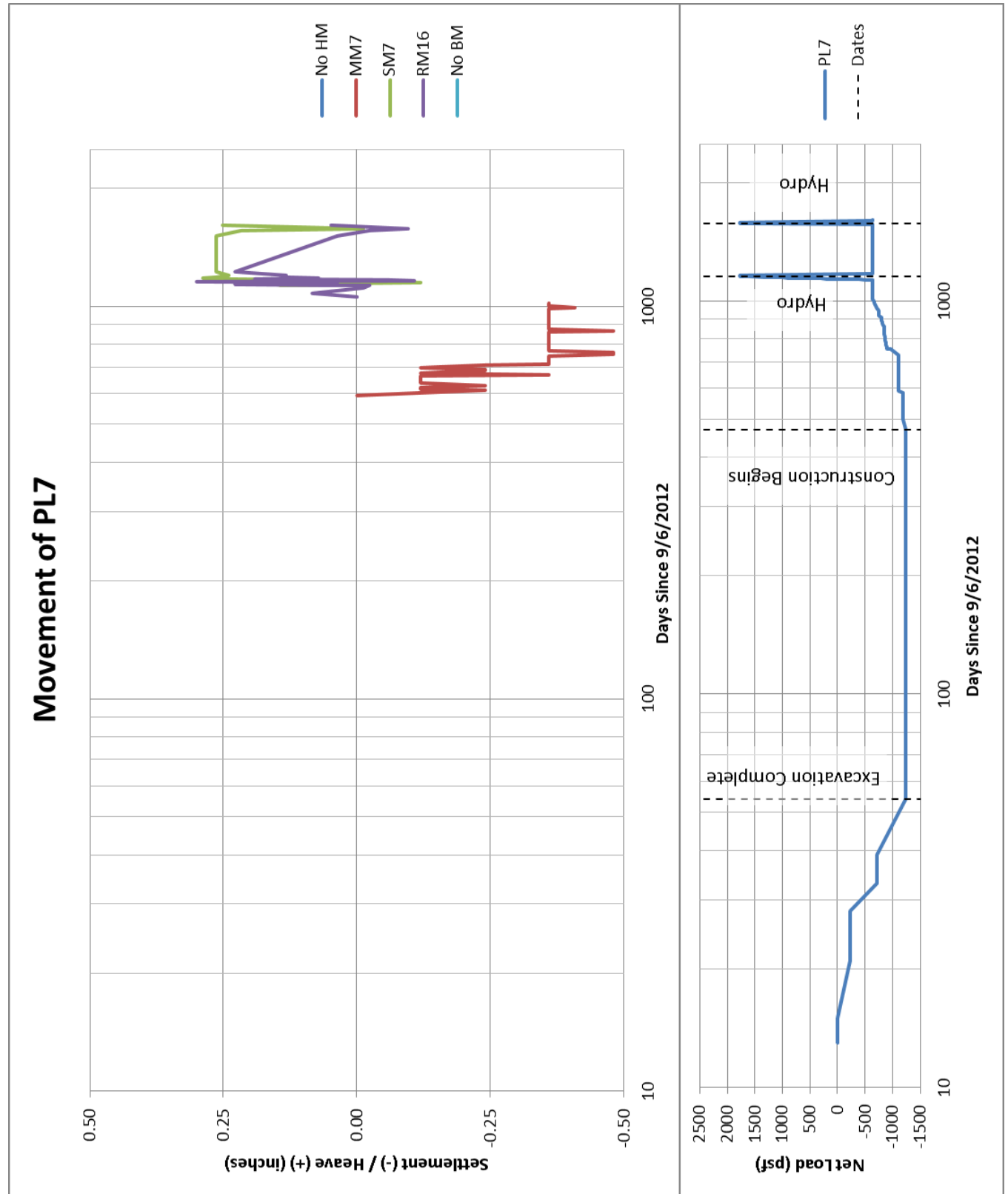




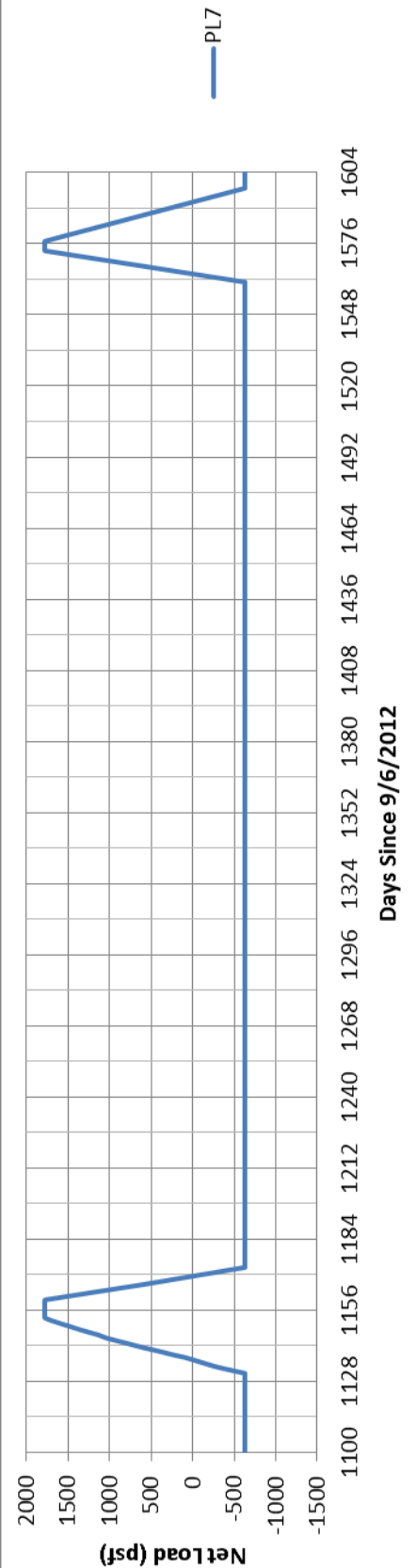
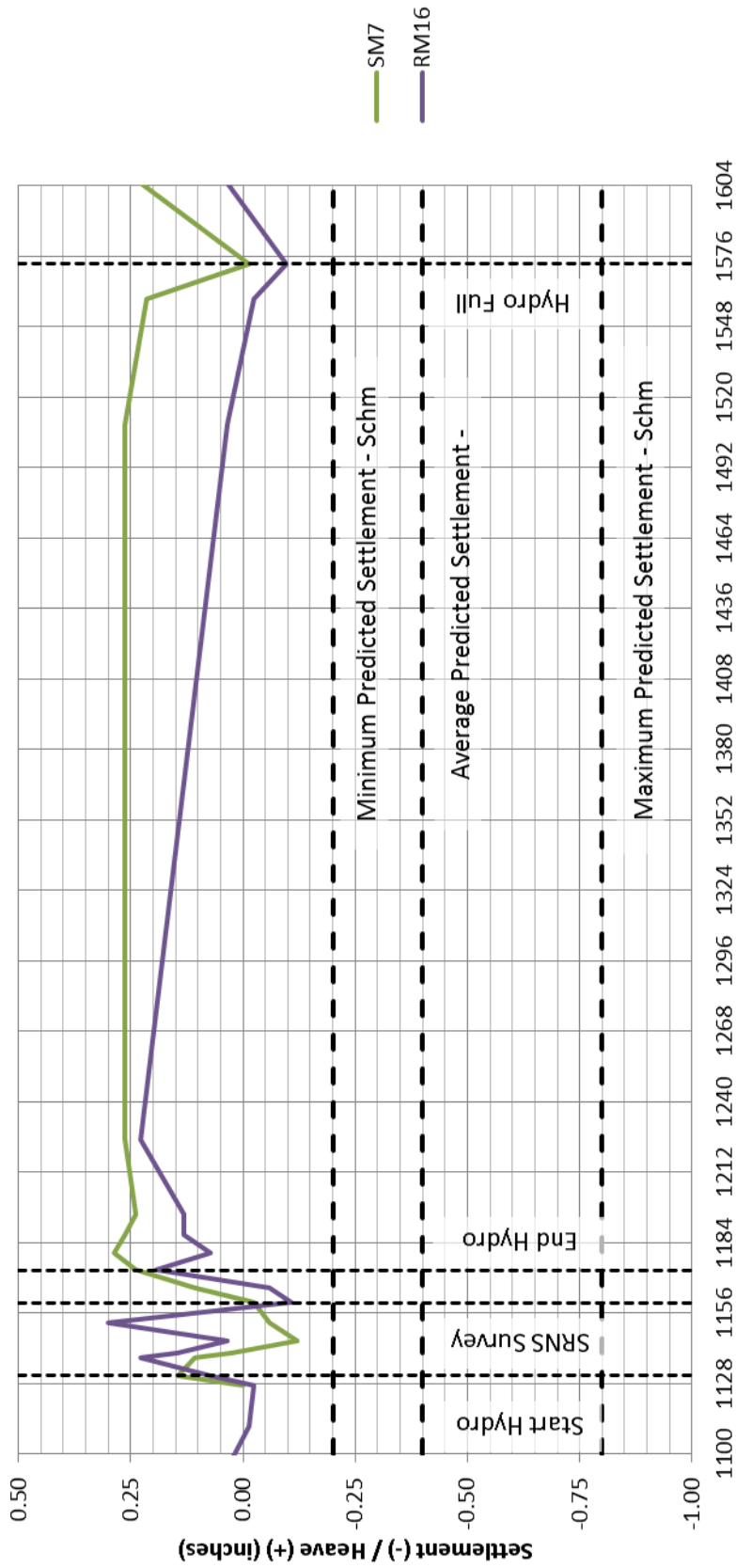


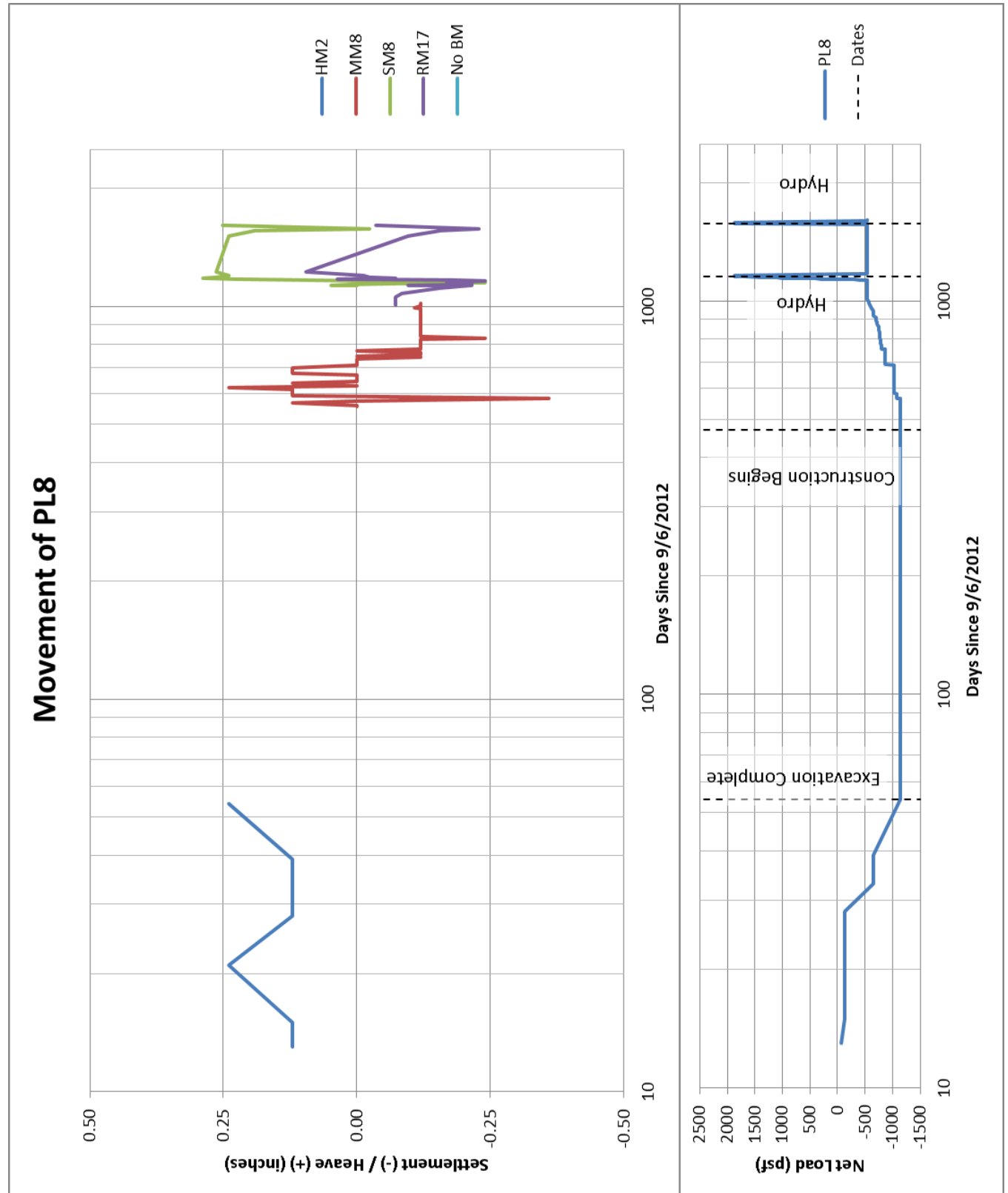




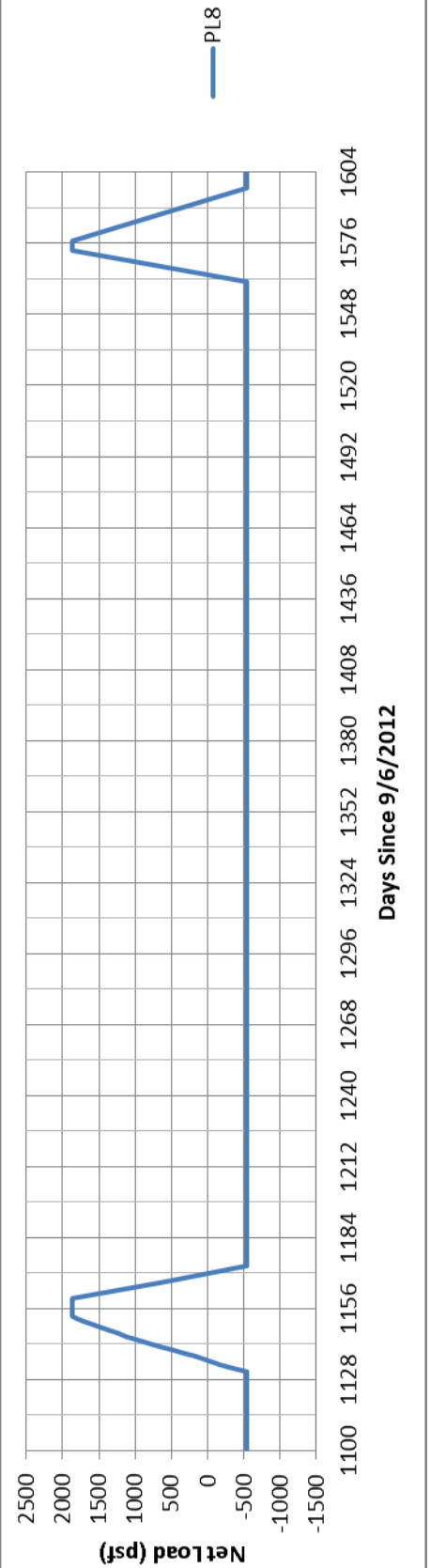
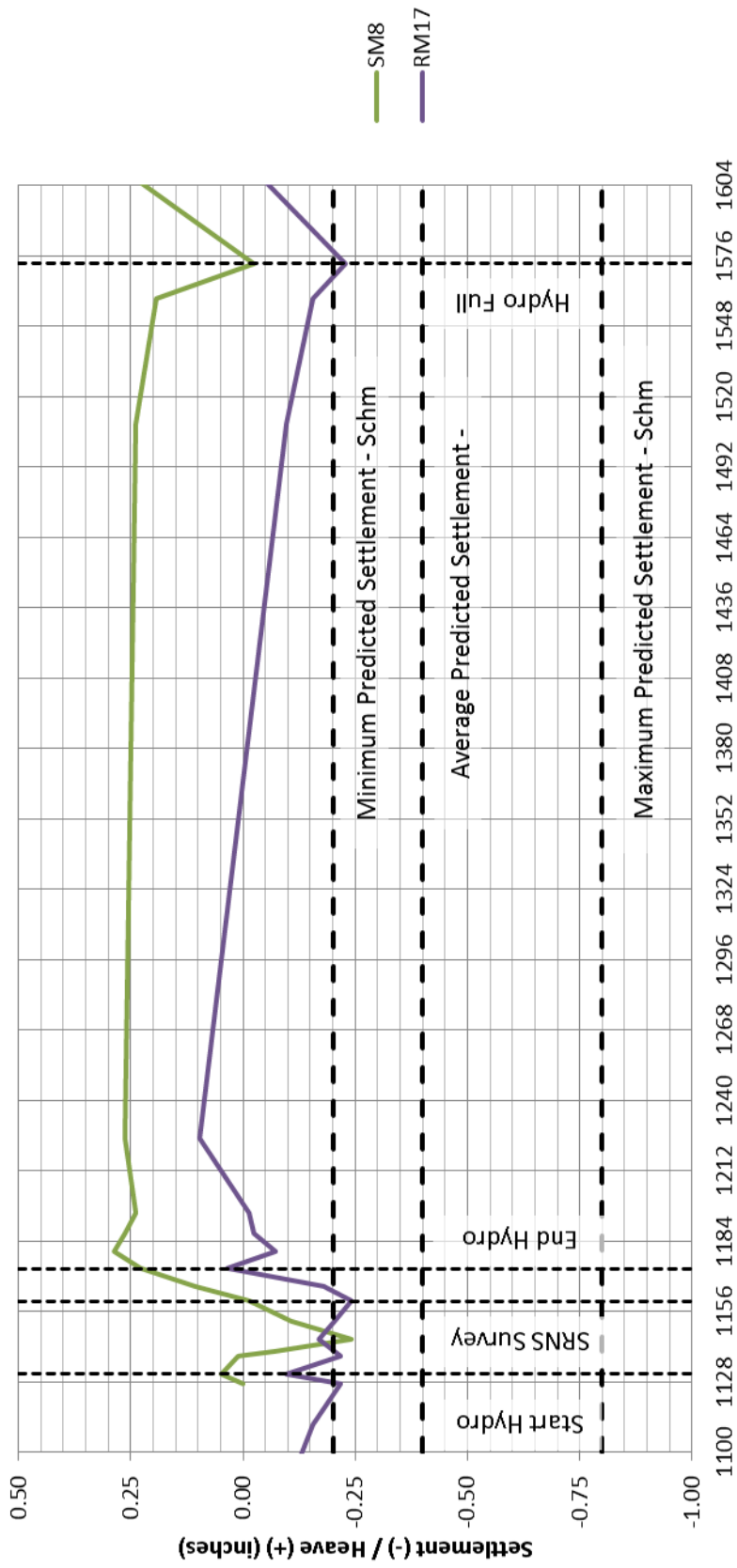


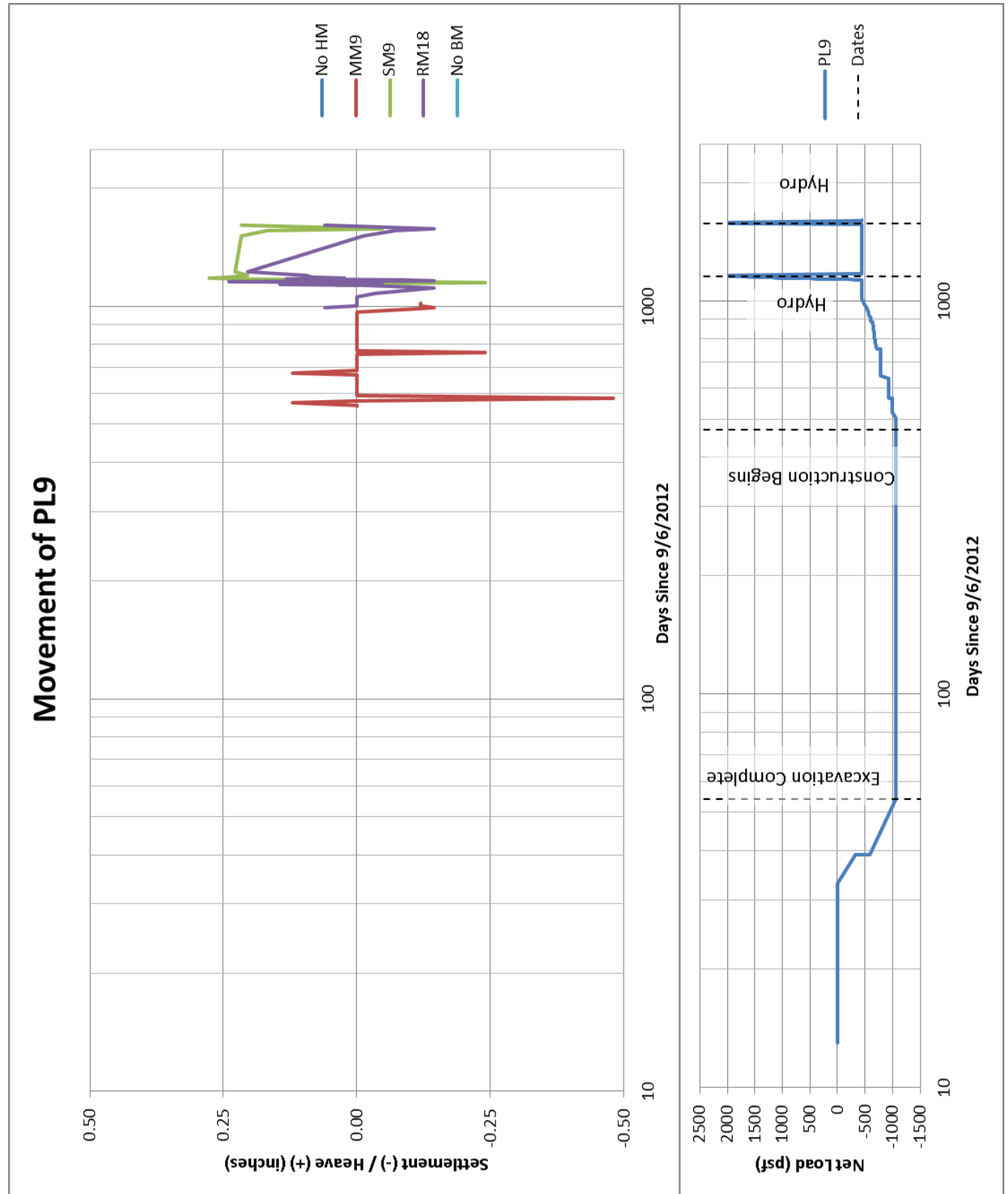
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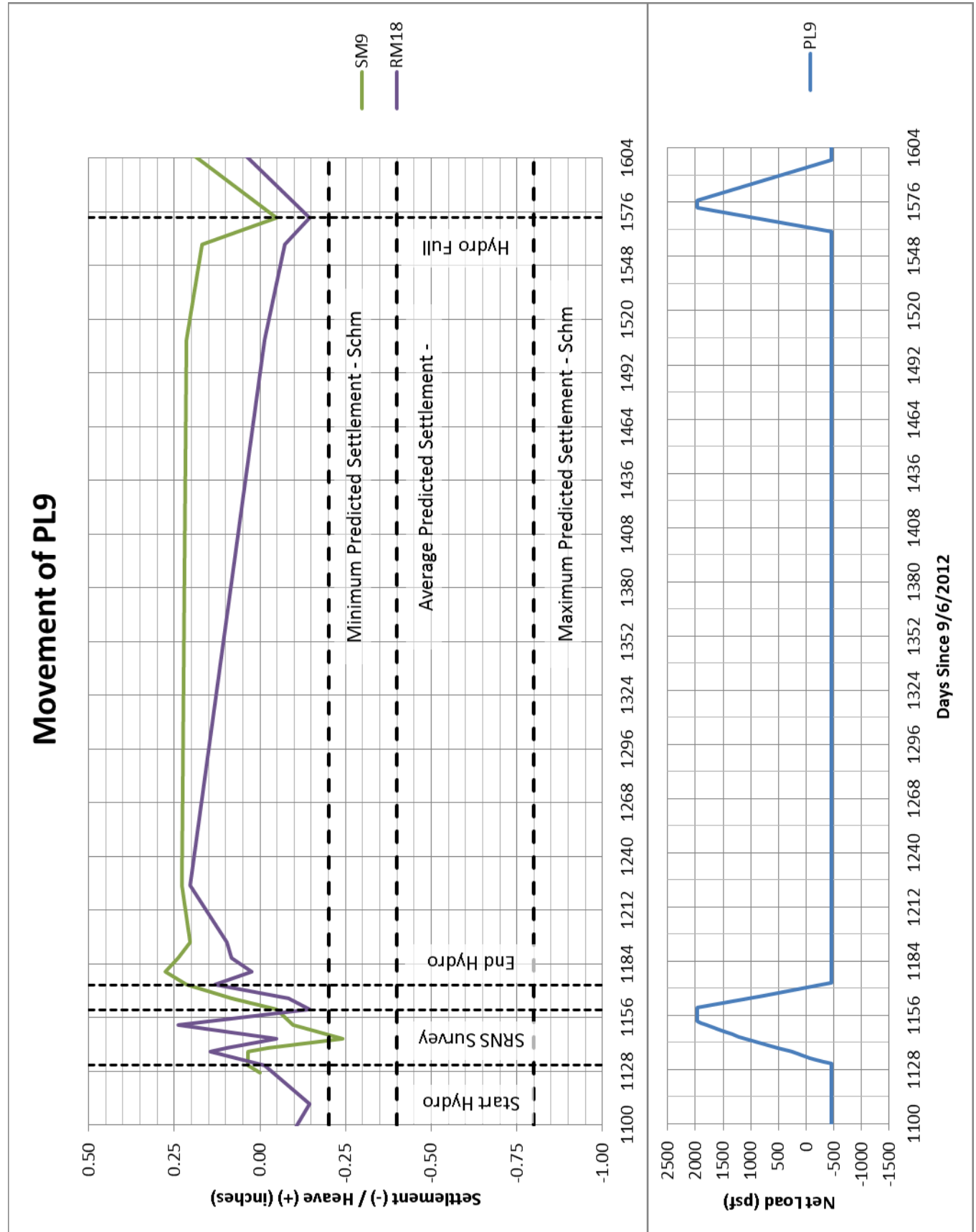


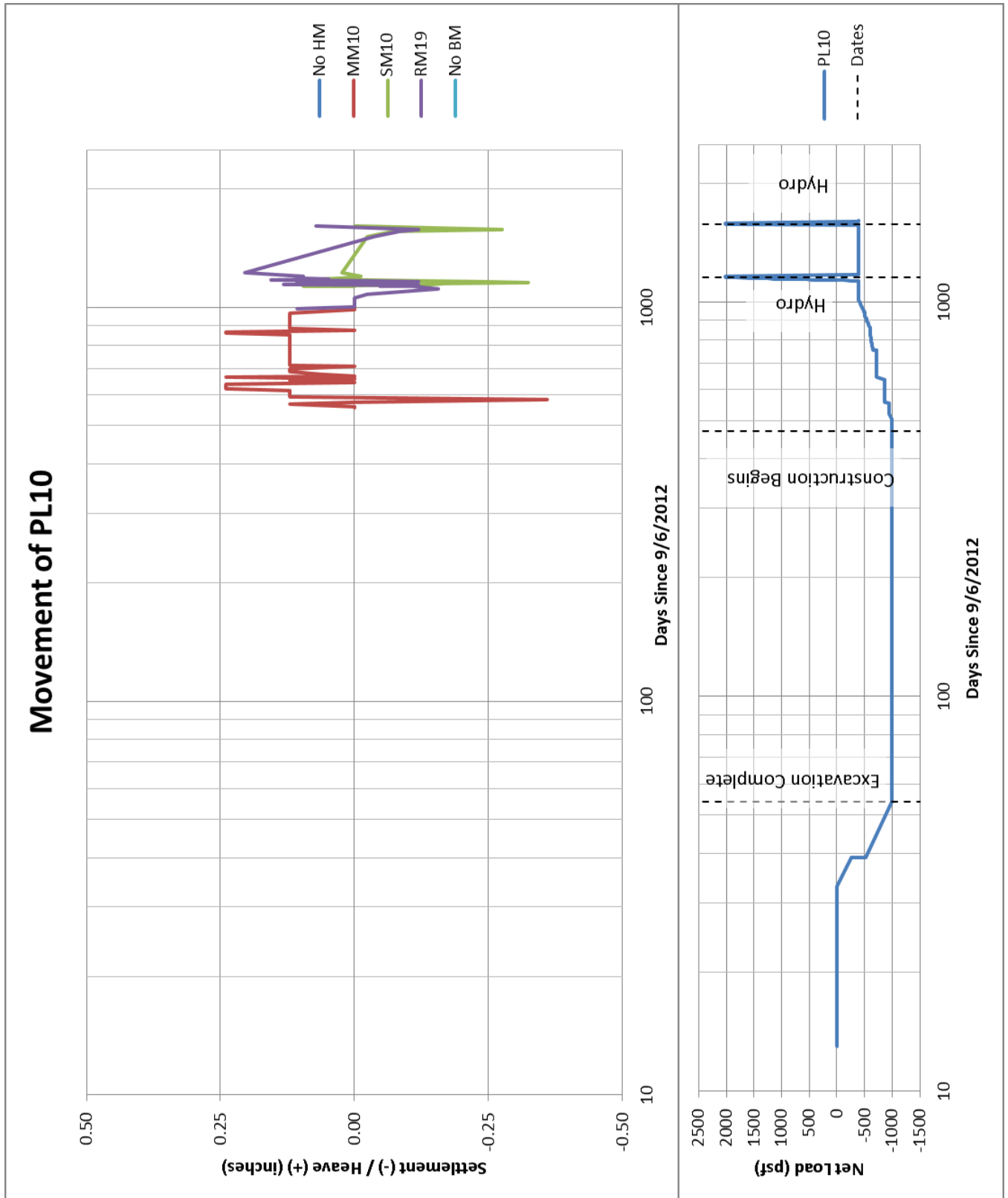


### Movement of PL8

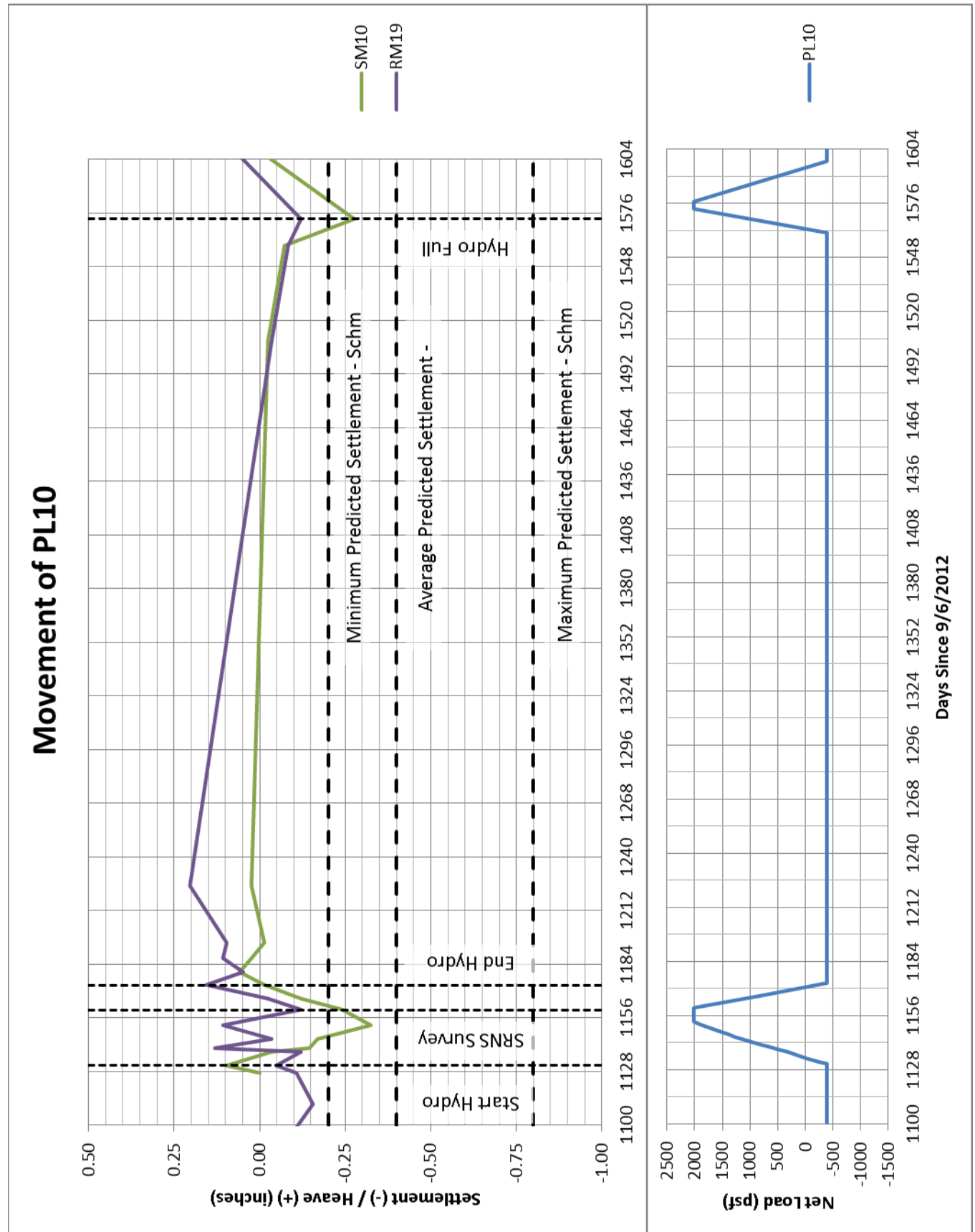












**Appendix B – Listing of Electronic Files**

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Settlement Readings.eml
Fw_ SDU 6 Settlements 07-28-15 - Complete.pdf
SDU 6 Settlement Reports 10_0815 and 10_12_15.pdf
SDU6 Settlements 10-8, 10-12. 8-20, 9-22.pdf
SDU 6 Weekly Settlement Report 10_19_2015.pdf
SDU 6 Settlement History of Curb Monuments.pdf
SDU 6 Settlements Report 10_21_15.pdf
SDU 6 Settlement Report 11_2_15.pdf

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