



Public Service Commission State of North Dakota

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July 23, 2018

Mr. Clyde Eisenbeis
2819 Horgan Drive
Bismarck, ND 58503

Dear Mr. Eisenbeis:

The Reclamation Division has reviewed your concerns regarding your land located in the NW $\frac{1}{4}$ of Section 34, T146N, R88W, as outlined in your May 4, 2018 email. Your property is located off-permit and adjacent to Surface Coal Mining Permit NACT-9501 at the Coteau Properties Freedom Mine.

The main issues you raise are: the diversion that was reconstructed on your property; access to your property; erosion on your property; and wet areas within your property.

The E $\frac{1}{2}$ of Section 34 is part of Surface Coal Mining Permit NACT-9501. Portions of the permitted area in the E $\frac{1}{2}$ of Section 34 were mined and reclaimed. Sedimentation ponds P-H34-04 and P-H34-05 were also constructed in the NE $\frac{1}{4}$ of Section 34 upstream of your property in 1999 and 2004, respectively. The purpose of sedimentation ponds is to detain surface runoff from mine disturbance areas until it meets the required effluent or discharge standards. During active mining operations, Coteau routed discharges from these ponds around your property through pipes to the main drainage channel in the NW $\frac{1}{4}$ of Section 34. Sedimentation pond P-H34-04 was removed and reclaimed in 2013 and sedimentation pond P-H34-05 was removed and reclaimed in 2015.

Reclamation Division staff noted on several occasions an existing diversion located on the east side of your property in the NW $\frac{1}{4}$ of Section 34 (off-permit). This diversion flowed to the north until it intercepted the south road ditch of the road between the NW $\frac{1}{4}$ of Section 34 and the SW $\frac{1}{4}$ of Section 27. We are uncertain who constructed this diversion and when it was constructed but it appears to have been in place for a long time. We assume that it was constructed to alleviate erosion on the downstream areas in the NW $\frac{1}{4}$ of Section 34. Historic

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aerial photography indicates well-defined erosion patterns in the NW¼ of Section 34, well before the area was permitted, mined, and reclaimed.

On August 28, 2007, Coteau submitted the application for Revision No. 30 to Surface Coal Mining Permit NACT-9501. This revision proposed changes to the postmine topography and watershed boundaries in the NE¼ of Section 34. The size of watershed 14-14 (most of the area controlled by sediment pond P-H34-04) decreased slightly (5 acres smaller than premine) but the size of watershed 14-15 (most of the area controlled by sediment pond P-H34-05) was increased by 132 acres. The combined area of watersheds (14-4 and 14-15) increased by a total of 127 acres. Revision No. 30 also proposed some land use changes for the NE¼ of Section 34 including changing the postmine land use of a portion of the watersheds from cropland to native grassland. Attached are maps depicting pre- and post-mine watersheds 14-14 and 14-15.

Due to the changes proposed by Revision No. 30 (increased watershed size and changes to the post mine topography), Coteau was asked to provide additional documentation that downstream areas would not be adversely affected by the increased watershed size of watershed 14-15. Coteau updated the Probable Hydrologic Consequences (PHC) section of the permit to address these concerns. Their analysis compared the premine watershed characteristics to those proposed in Revision 30. A standard and commonly accepted watershed flow model was used to predict runoff velocity and volumes from the revised watershed areas and these values were compared to the premine conditions using the same models. Attached are the results of that modeling (Table 3 of Section 2.2.5 of Permit NACT-9501).

The model predicted the peak discharge rate (velocity measured in cubic feet per second or cfs) and total runoff volume measured in acre-feet (ac-ft). Three different rainfall events were modeled: a 2-year, 24 hour rainfall event (1.93"), a 10-year, 24 hour rainfall event (3.12"), and a 25-year, 24 hour rainfall event (3.63"). Peak discharge and total runoff volumes were calculated at the control point (the point where the sedimentation ponds would have discharged) for each watershed and then for the combined flow of both watersheds. The combined total discharge rate and flow volume is simply the sum of the two watersheds. While the calculated peak discharge and total runoff volume of watershed 14-15 increased over premine conditions, the peak discharge and total runoff volume of watershed 14-14 decreased, and the sum total peak discharge and total runoff volume for both watersheds (or that which would flow in the diversion) actually decreased.

The Reclamation Division staff have reviewed the flow modeling provided by Coteau and have determined the parameters and assumptions used were appropriate and reflected the actual conditions. In response to your concerns, staff again modeled both watersheds and the results of our independent modeling are similar to those provided by Coteau in Revision 30. A copy of our analysis is attached.

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Our analysis shows that even though the total combined watershed size increased after reclamation, the expected total flow rates and volumes are less than the premine condition. This is due to a number of reasons but is primarily due to the reclaimed or postmine watersheds being less steep than the premine watersheds. The premine average slope of watershed 14-15 was 12.7% and the postmine average slope is 4.4%. In addition, the shallow and claypan soils that were common in the premine watershed were replaced with deeper, loamy soils with higher infiltration rates. In addition, there is less cropland and more native grassland in the reclaimed watershed than in the premine watershed. The perennial native grassland vegetation generally has a lower runoff potential than cropland.

North Dakota Century Code 38-14.1-24(8) requires that mining companies "minimize disturbances to the prevailing hydrologic balance at the mine site and in associated offsite areas and to the quality and quantity of water in surface and ground water systems both during and after surface coal mining operations and during reclamation." As part of Revision No. 30, the Reclamation Division determined that although the combined watershed size increased following mining and reclamation, the combined peak discharges and total runoff volume decreased or was near premine conditions. Therefore, there would be no adverse effects to the downstream areas as a result of the changes proposed in Revision No. 30. Revision No. 30 was approved on January 9, 2009.

As previously stated, pond discharges were routed around your property via a pipe discharge during mining and reclamation. Only when the ponds overflowed, did they flow through the old field-engineered diversion. Coteau has indicated that they were approached by the tenant Wayne Eisenbeis in 2010 and 2011 about the erosion in the NW¼ of Section 34. It should be noted that this erosion had taken place while the pond discharges were being routed around the NW¼ of Section 34. In 2011, the tenant reportedly also asked that the diversion be rebuilt to prevent the re-occurring erosion. The diversion was re-built by Coteau in late 2012. Coteau indicated that they have repaired erosion on your property in 2010, 2011, and 2014. In addition, grassed waterways were installed by Coteau on your property in 2015; however, they have been farmed through.

Attached to this letter is a copy of the April 26, 2018 inspection report that you and the current renters participated in.

Each of your specific concerns is addressed separately below:

The diversion that was reconstructed on your property: As previously stated, the original diversion was constructed many years prior to mining and reclamation. At the time that Revision No. 30 to Permit NACT-9501 was approved, Coteau demonstrated that the changes proposed by Revision No. 30 would not have adverse effects on downstream areas and the Reclamation Division concurred. The condition or the functionality of the existing diversion on your property

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was not evaluated at that time since the Reclamation Division found that the actions proposed by Revision 30 would not result in adverse effects to downstream areas, i.e., the calculated combined flows of reclaimed watersheds 14-14 and 14-15 are less than the premine condition. Our re-analysis of this finding in response to your concerns reaffirms our original finding made in 2009 when Revision No. 30 was approved.

It is our understanding that the tenant at the time asked Coteau to reconstruct the diversion and south road ditch. The Reclamation Division was not involved in the reconstruction of this diversion and continues to view this issue as a matter between Coteau and the landowner. We do not view reconstruction of the diversion as a mining related matter and therefore, it is not subject to our jurisdiction.

However, in our review of the matter, we concluded that Coteau should reconfigure the upstream drainage channel from watershed 14-15 into the reconstructed diversion channel. This is discussed further under **Required Action** near the end of this letter.

Access to your property: You have requested that the creflex crossing on the north side of your property be replaced with an approach to improve access. The creflex crossing was previously installed by Coteau shortly after the diversion/road ditch had been reconstructed. Coteau has indicated that they were willing to build the approach provided you sign the agreement they prepared. You indicate that you provided them with your permission to construct the approach. We encourage you and Coteau to resolve this issue to both parties' satisfaction. As with the reconstructed diversion, we do not view the road ditch and access as a mining related matter that is jurisdictional to the Commission.

Repair of erosion: There is evidence that there has been a long-term erosion problem in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 34. Historical aerial photographs provide evidence of erosion prior to mining and reclamation. We believe that is why the field-engineered diversion was constructed in the first place. During mining and reclamation, runoff from the upstream areas was routed around your property. The only time when there would have been flows across your property from the upstream areas is when the ponds overflowed due to a significant runoff event in excess of the design standards. We are aware that the rebuilt diversion overflowed twice, both times in 2014. One overflow event took place on the south end of the reconstructed diversion and was likely due to snow blocking the diversion channel making it non-functional during the snow melt event. The other overflow event took place in August 2014 following a significant rainfall event in excess of the design standard that caused sediment pond P-H34-05 to overflow. The watershed 14-15 outlet into the reconstructed diversion washed out causing the diversion to overtop. We are aware that the erosion associated with these events was repaired by Coteau. Any erosion that has taken place while the diversion has been functioning as intended (i.e., taking runoff water from upstream areas around the east side of your property), is not likely to have been caused by runoff from the upstream watersheds.

The Reclamation Division has determined that Coteau conducted mining and reclamation activities in the watersheds above your property in the NW¼ of Section 34 in accordance with all required surface coal mining laws and regulations, and therefore they are not responsible for the erosion that may have occurred on your property. The Reclamation cannot require Coteau to repair erosion that is not the result of mining and reclamation activities.

Wet areas within your property: You imply that Coteau has raised the water table in this area resulting in wet areas in the southwest corner of your property. The natural surface flow in this area is to the north through several low gradient natural drainage channels within the Beulah Trench. Ground water also flows to the north in this area. Since 2010, there have been very limited surface water discharges and no pit water discharges to the north from Coteau's mining operations located to the south of your property. All pit water discharges and most of the surface water discharges have been to the south through West Antelope Creek. However, there are large undisturbed portions of the watershed that still flow naturally to the north and do not flow through a sediment pond.

The elevation of shallow ground water tables have raised over much of western and central North Dakota in recent years due a trend of increased precipitation. In addition, ground water elevations in the Beulah Trench are influenced by the water elevation of Lake Sakakawea, which has been operated at relatively high levels for several years. The Reclamation Division concludes that the wet areas in your field are not the result of Coteau's mining and reclamation activities.

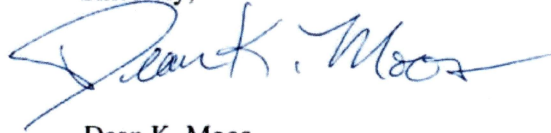
Required Action: During our reanalysis of the Probable Hydrologic Consequences (PHC), we noted the reclaimed grassland drainage channel for watershed 14-15 (within the permit area) enters the reconstructed diversion at a right angle and drops several feet in elevation over a very short distance. This configuration has resulted in erosion and maintenance problems in the past. The original drainage channel flowed in a more northwesterly direction and entered the existing diversion near the northeast corner of the NW¼ of Section 34. We will require Coteau to re-route this drainage channel in a more northwesterly manner, similar to how it existed prior to mining. This will result in a more stable configuration and much of the drainage from watershed 14-15 will flow almost directly into the east-west reconstructed road ditch rather than flowing into the north-south reconstructed diversion. As a result of this reconfiguration, most of the drainage from watershed 14-15 will "bypass" your property with the exception of the south road ditch. Most of this "reconfiguration work" will take place within the permit area; however, the point at which the reconfigured drainage channel will enter the reconstructed diversion is located on your property and we encourage you to work with Coteau to accommodate the reconfiguration of this drainage channel.

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As requested in your June 26, 2018 email, we can meet with you at your convenience if you so desire. We can also extend the invitation to Attorney General Stenehjem as you requested once the date of the meeting is established.

Please feel free to contact our office if you have any questions.

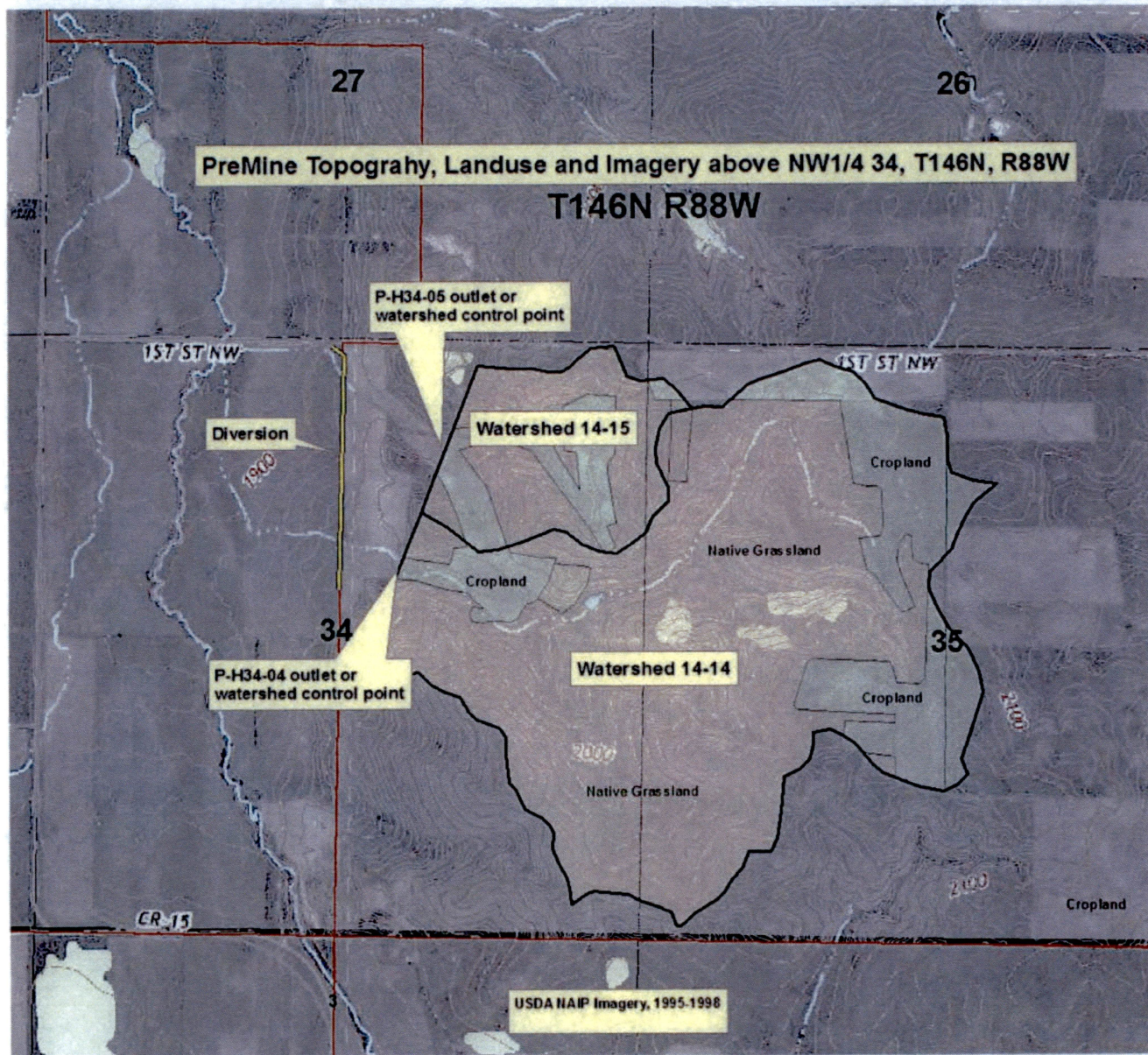
Sincerely,

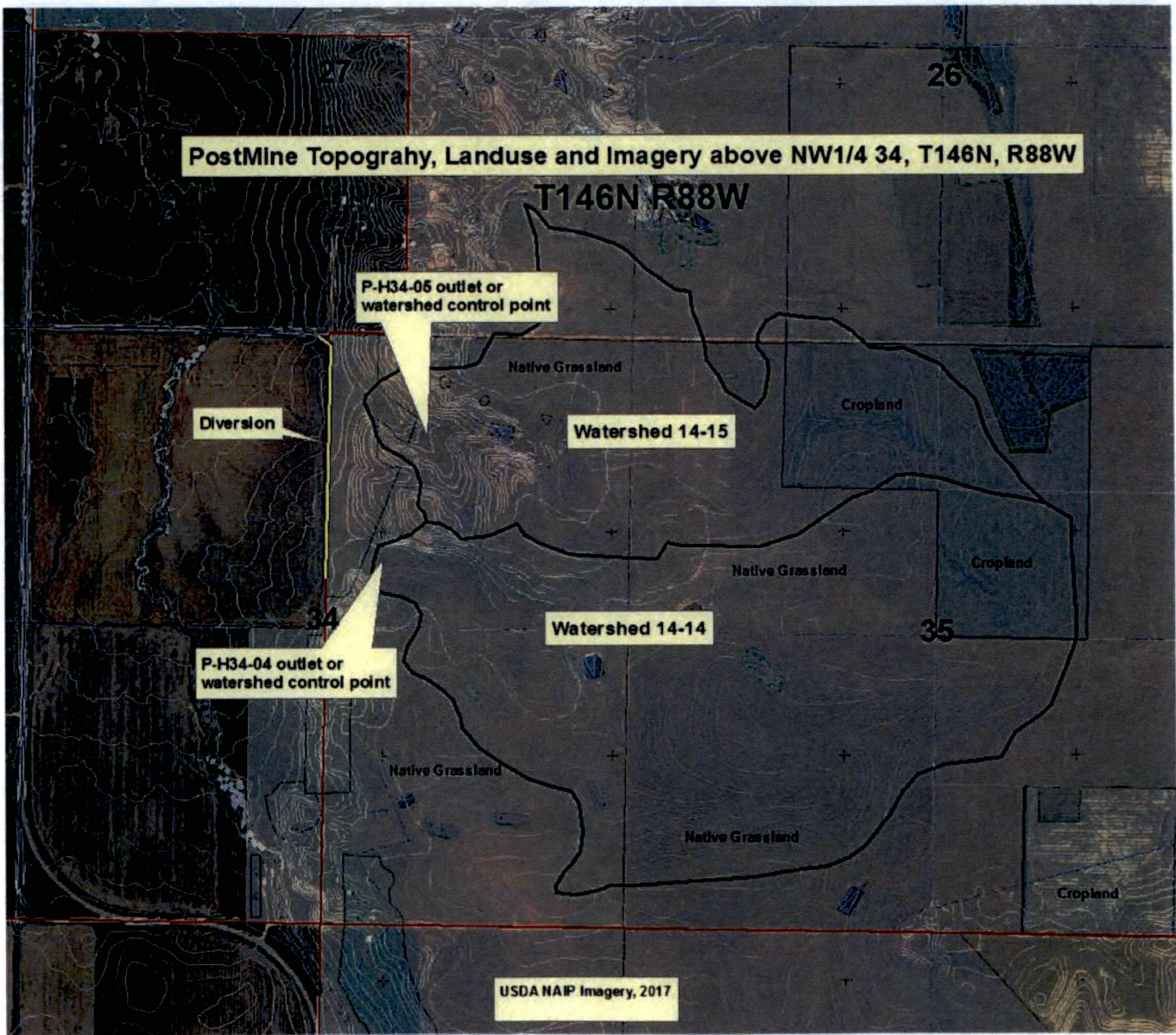
A handwritten signature in blue ink that reads "Dean K. Moos". The signature is fluid and cursive, with a long horizontal stroke at the end.

Dean K. Moos
Director, Reclamation Division

Attachments: 1) Pre-Mine Topography, Landuse, & Imagery above NW¼, T146N, R88W
2) Post-Mine Topography, Landuse, & Imagery above NW¼, T146N, R88W
3) Table 3 of Section 2.2.5, PHC, Revision 30 to Permit NACT-9501
4) Results of the Reclamation Division modeling & map
5) April 26, 2018 Inspection Report

cc: Sarah Flath
Chris Friesz





**+Table 3
COTEAU PERMIT NACT-9501
PEAK DISCHARGE AND TOTAL RUNOFF VOLUME
@ DESIGNATED CONTROL POINTS (AMC - II)**

CONTROL POINT	DRAINAGE AREA			DISCHARGE			VOLUME		
	PRE MINING (acres)	POST MINING (acres)	% CHANGE	PRE MINING (cfs)	POST MINING (cfs)	% CHANGE	PRE MINING (ac-ft)	POST MINING (ac-ft)	% CHANGE
2-YEAR, 24-HOUR RAINFALL EVENT, (1.93 inches)									
14-14	340	335	-1.5	92.9	21.5	-76.9	12.4	5.8	-53.2
14-15	78	210	+169.2	6.1	11.9	+95.1	1.2	3.8	+216.7
TOTAL	418	545	+130.4	99.0	33.4	-66.2	13.6	9.6	-29.4
10-YEAR, 24-HOUR RAINFALL EVENT, (3.12 inches)									
14-14	340	335	-1.5	292.0	125.1	-57.2	33.9	21.4	-36.9
14-15	78	210	+169.2	40.1	63.2	+57.6	4.7	13.8	+193.6
TOTAL	418	545	+130.4	332.1	188.3	-43.3	38.6	35.2	-8.8
25-YEAR, 24-HOUR RAINFALL EVENT, (3.63 inches)									
14-14	340	335	-1.5	388.5	187.0	-51.9	44.4	30.0	-32.4
14-15	78	210	+169.2	59.6	93.5	+56.9	6.6	19.2	+190.9
TOTAL	418	545	+130.4	448.1	280.5	-37.4	51.0	49.2	-3.5

REVISION 30
 08/22/08
 11/14/08

Global Summary Results for Run "Run 10-24"



Project: Eisenbeis PostMine2 Simulation Run: Run 10-24

Start of Run: 26Jun2018, 08:00 Basin Model: Basin 14-15
 End of Run: 27Jun2018, 08:00 Meteorologic Model: 10yr/24hour
 Compute Time: 23Jul2018, 09:23:35 Control Specifications: Control 10_24

Show Elements:

Volume Units: IN AC-FT

Sorting:

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Subbasin-14-14_ABC	0.44	103.8	26Jun2018, 20:45	17.1
Subbasin-14-15	0.28	40.8	26Jun2018, 21:45	10.7
SP-H34-01	0.28	43.2	26Jun2018, 21:45	9.0
Subbasin-14-15NP	0.05	18.6	26Jun2018, 20:15	2.0
Junction-1	0.33	45.7	26Jun2018, 21:45	10.9

