







and the result is no data if the area has a slope as shown in figure (6).

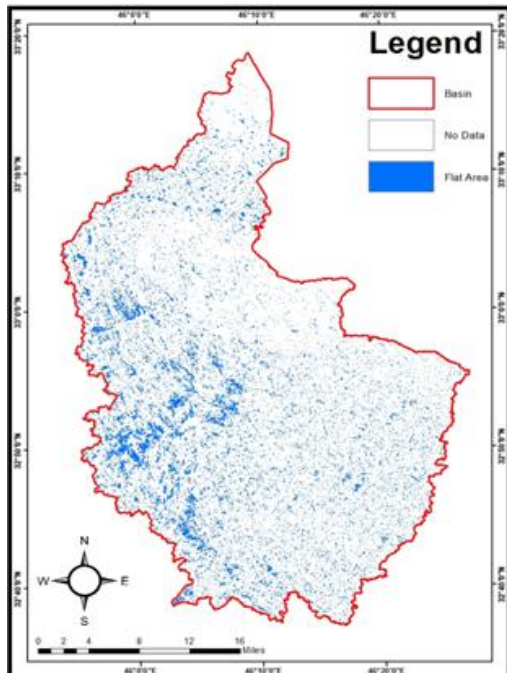


Figure 6: Flat areas

## 8. Results and Discussion

Lineament structures regarded as one of the impediments that affect the choosing of the dam site because it is a fault generated due to the underlying of geological structure. So that in determining dam site, lineaments or lineaments intersection must be avoided because it cause the collapse of the dam. The dam site must be in flat area or in area of small slope to facilitate the calculation of the amount of water collected by the dam. Also the dam site must be located on stream of high order to collect large amount of water. Due to the previous considerations three layer were combined, 6th order, lineaments, and flat area layers as shown in figure (7).

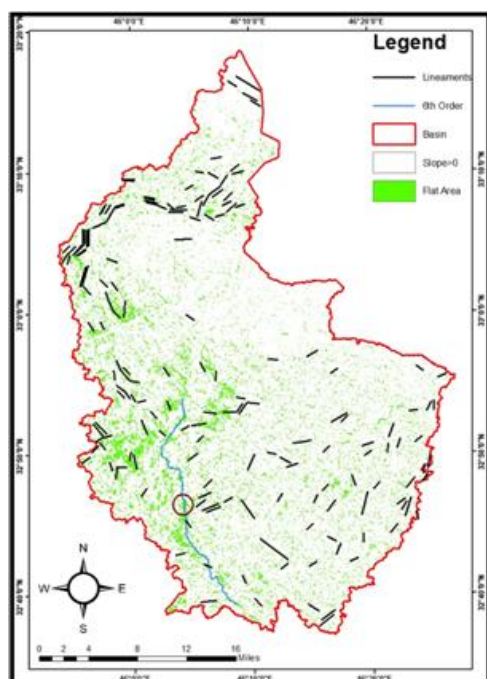


Figure 7: 6<sup>th</sup> Order, lineaments, and flat layers

As noticed from figure (7) that the encircled area has no lineaments, no slope, and located on the higher stream order so that this area studied by taking many profile across the stream (The Profiles is a 3D analyst tool show the change in elevation of a surface along a line). One dam site was suggested to be the best site and has the profile shape illustrated in figure (8).

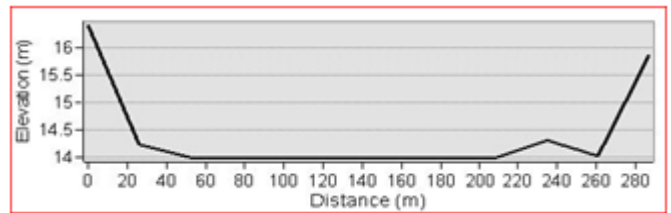


Figure 8: Cross sectional profile of the suggested dam site

This site is located on (46° 4' 11" E and 32° 46' 29" N) as illustrated in figure (9).

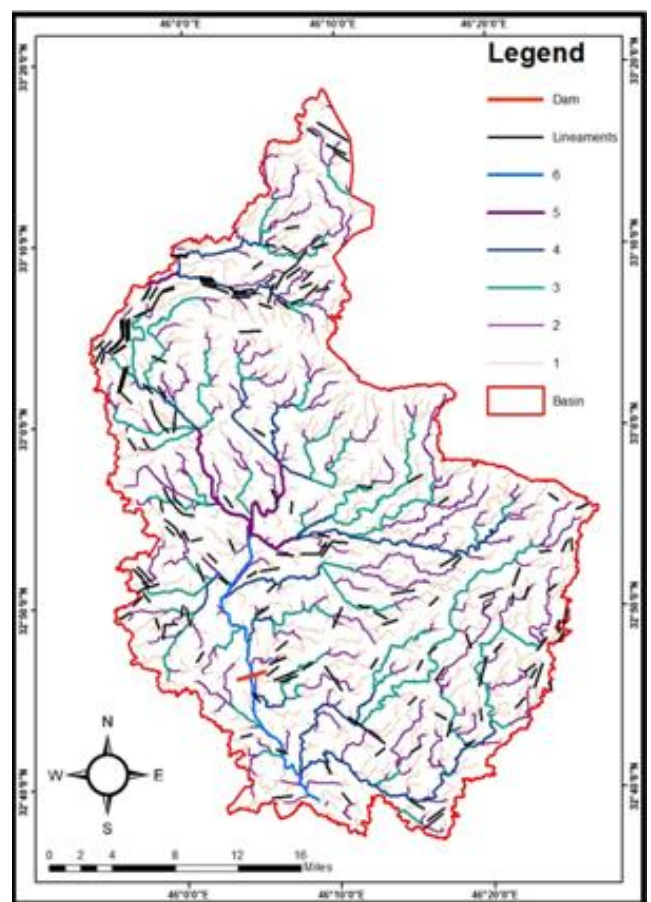


Figure 9: Suggested dam site

## 9. Conclusions

1. The GIS can be utilized in two ways. First, to input, store, organize and analyze the available data. Second, the spatial analysis, visualization and query capabilities of GIS can be employed in selecting the dam site for a precondition set of criteria.
2. GIS and Remote sensing techniques have proved to be accurate and efficient tool in drainage system delineation.
3. Depending on the size of the DEM, processes like Filling Sinks and Flow accumulation can take from few minutes to up to one hour or more.

4. The first stage in any hydrology processing is to fill any pits in the DEM using the fill tool to ensure that water can flow over the surface without becoming 'stuck' in an erroneous hole in the DEM.
5. In order to check the reliability of the automatic lineament extraction, manual lineament extraction is referred as a reference.
6. Profiles can help in studying the change in elevation of a surface along a line.

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## Authors Profiles



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