Questions and Answers

1. **What kind of license do you need to access Arc Hydro?**

Depends on the tools being used. Most of the tools will work with the basic license of Pro and Spatial Analyst.

2. **Extra cost for extension of Arc Hydro?**

Arc Hydro is free, but you need to have underlying Esri desktop technology (ArcGIS Pro or ArcMap and Spatial Analyst extension).

3. **Do they work on a standard license with spatial analyst or would I need the advanced license?**

Spatial Analyst does not have tiered license (also see answer #1).

4. **If we already have ArcPro & ArcMaps for desktop, are the Hydro Tools already in the software or is something extra we need to download from ESRI?**

This is an additional download. Refer to "Downloading and Installing Arc Hydro Tools" document.

https://www.esri.com/content/dam/esrisites/en-us/media/fliers/downloading-arc-hydro-2021.pdf

5. **If I want to learn it, what would be the first point?**

Please review document "Getting Started with Arc Hydro" and associated links.

https://go.esri.com/AH_Getting_Started

Also, join us for the next webinar in the Arc Hydro series on "Arc Hydro: Self and Esri Training Opportunities".

6. **We would like to use Pro, but many of our municipal clients remain on ArcMap. Is there a way to export Pro layers back to ArcMap, even if it is something as simple as shapefiles, which would allow us to untether from ArcMap and go Pro?**

Everything that Arc Hydro tools create are either vectors stored in a file geodatabase or rasters. Both of these are directly accessible to ArcMap and there is no need to do any data export (it is strongly advised that you do NOT move the data into shape files). The exception is that the trace network that is generated by some tools will not be useable in ArcMap. The workaround is simple, just delete the trace network and rebuild an equivalent geometric network in ArcMap.

You can also use ArcMap version of Arc Hydro tools if necessary, but that is not recommended as there is no further development of Arc Hydro tools for ArcMap.

7. **Arc Hydro has many capabilities but are there examples available that show how to use the more advanced features beyond simple delineations and curve number extraction. For example, is there an example available on how to analyze and set up connectivity for a watershed with a known sink feature?**

Please review document "Learning about Arc Hydro: Resources and Documentation"

https://go.esri.com/AH_Resources

It lists many documents that cover specific, more advanced topics. Document "Arc Hydro: Overview of Terrain Preprocessing Workflows" covers topic you are specifically mentioning in your example.

8. **Do you use DTM?**

Yes, DTM (and/or DEM) is used a foundational basis for raster processing in Arc Hydro.

9. **Is there AI with Arc Hydro groundwater?**

No.

10. **Will there be a python API on ArcPY or ArcGIS for Arc Hydro?**

All Arc Hydro tools for ArcGIS Pro are written in Python using ArcPy.

11. **Is there any tool or capability that generate hydrograph of a storm?**

Tool "Produce Hydrographs", part of the "Critical Duration" toolset can produce a hydrograph based on rational method. Please review webinar "Arc Hydro: Hydrology and Hillslope" from last year's Arc Hydro webinar series for introduction to the topic and the tools. New, complete documentation for the toolset will be released in next few weeks.

12. **Can you discuss bathymetry in Rivers?**

In general, input into all Arc Hydro tools is a digital elevation model. That can include "bathymetry" portion and if that information is present in the DEM, all Arc Hydro tools will use it. Arc Hydro does not have specific tools to "build" bathymetry. Standard Spatial Analyst (or 3D Analyst) tools can be used to manage elevation and bathymetry before they are used in Arc Hydro.

13. **With Arc Hydro Tools, can I model drainage flows, as it is done in Hec-Ras?**

Arc Hydro does not directly route flows like you would do in HEC-RAS or other hydrodynamic models. Instead, Arc Hydro prepares the spatial data for input into those models and can bring in the results for mapping. Please review Please review webinars "Arc Hydro: Flooding and Forecasting" and "Arc Hydro: Support for Hydrologic and Hydraulic Modeling" from last year's Arc Hydro webinar series for introduction to the topic and the tools.

14. Ras Mapper integration?

Through import and export of data via tif raster data and .sdf or shape files for vector data.

15. How are the new tools in GeoRAS better than what are currently present in the RASMapper?

"GeoRAS" tools for hydraulic data preparation are not better or worse than RASMapper tools – they just have different focus and approach and are used in different editing context.

16. For the flooding analysis, does Arc Hydro consider semi-natural reservoir where the outlet is controlled by a man-made fix height dam (overspill)?

In Arc Hydro you can calculate either the flood extents based on the HAND approach where the assumption is that the water surface elevation is parallel to the bottom of the channel, or under the assumption that the water surface elevation is horizontal which might be applicable in coastal or lake modeling situations. The latter might apply to your use case.

17. For the Trace Network support, is that for both File GDB and Enterprise support?

Yes.

18. Is it possible to send a link for the international data that would be an input for floodplain modeling?

Yes.

19. Which global elevation dataset do you recommend using for hydrological analysis such as flood plain delineation or stream network extraction? Is it better to use something like the Copernicus 30 meter DSM or the SRTM DEM?

In general, hydro-conditioned DEMs will be better for any hydro analyses. Digital surface models that do not have vegetation and buildings removed are usually not good. Elevation datasets such as Hydrosheds or Merit where hydro-conditioning has been performed are recommended for hydro analysis. Copernicus GLO-30 is a bit of a hybrid (hydro-flattened). We have not evaluated it yet, but it appears to be a viable option.

20. When does elevation data need to be projected for hydrological modelling? I am more interested in a country level analysis where projecting into a single UTM zone isn't applicable. Many processes require a projection but I never know which properties to preserve. ie direction and distance, etc. Any clarification on this would be greatly appreciated!

For hydrologic modeling where mass balance is important, equal area projections are recommended.

21. If topology rules are enforced, why are there gaps in stream predictions?

In general, there should be no gaps in streams or floodplains – but they can occur in landscapes where there are depressions (sinks). That will generate discontinuous streams and floodplains.

22. Which morphological indicators is it using?

Arc Hydro has a number of surface, watershed, and stream characteristics.

23. How does Arc Hydro relate to NHDPlus, if at all?

NHDPlus/NHDPlusHR is a specific dataset (and data model) and can be used as a dataset to feed into Arc Hydro. Then all the additional analytical tools in Arc hydro (such as watershed delineation, characterization, etc.) can be applied.

24. Would this tool be appropriate to a model Beaver complex?

If this relates to "beaver dams", the answer is "possibly". It can be used for watershed delineation, ponding and similar analyses.