Disposition of Questions Submitted by RFCs for Panel Discussion
DOH Science Workshop
June 7-11, 2004

Category	Disposition	Question	Notes (from meeting notes)/Response
Flash Flood	Wed. pm Flash Flood presentations 15, 16, 17, 18a, 18b	1. Modernized/gridded FFG - NWS has been trying to implement for many years. FFGIT report of 2/6/2003 made 4 recommendations to be accomplished in one to two years. a) optimize perf of existing system, b) abandon threshR and develop Statistical Distributed FFG, c) develop FFG verification system and d) NWSHQ will provide national FFG coordination and oversight. What is the status of these items?	
	Wed. pm session Topics 15, 17 Also, covered in Panel Discussion Q6	29. Producing gridded FFG requires both gridded modeling as well as an accurate field of gridded threshold runoff values. Where do we stand in making these capabilities available to the RFCs?	
	Wed. pm session Topic 15. Also, covered in Panel Discussion Q6	36. What current plans are in place for making significant scientific improvements to the FFGS?	Note: A distributed statistical technique is being developed.
Requirements	Same as Q17	2. The Hydrology Software Requirements Process developed a	

	below. Answered in Panel Discussion Q7	few years ago never worked. What is the status of addressing how requirements will be handled in an effective manner?	
	Panel Discussion Q7	17. Is the hydrologic program going in the right direction to meet the field hydrologic requirements? How is this determined?	Note: There is a ranking and prioritizing process that involves the regional representatives. User needs are identified through many methods..surveys, field polls, etc..
	Panel Discussion Q8	32. What is the status of the requirements process? I have not seen any lists to prioritize for several years, which I thought was supposed to happen every 6 months. The recent status report indicated that a lot of items that were on the "top 50" are still unscheduled.	Note: Some top 50 items (the ones with a broad scope) might be moved into AHPS theme plans. The remaining items will be specific fixes or enhancements. An FY04 has not yet been produced.
Verification	Thurs. pm presentations 24, 25, 26	3. Other NWS programs have performance goals and statistics. What is the status of the hydrology program implementing river forecast verification performance goals so that we can become a player in the current performance based budget process?	
QPF	Covered in Panel Discussion Q1 (below)	4. A few years ago, the National Science Foundation identified QPF as a fruitful area in need of R&D. Use of QPF in river forecasting continues to be very problematic for all forecast time periods. Other than local RFC efforts, what is being done on the national level to address QPF issues?	
	Panel Discussion Q1	5. We have seen plans that call for RFCs to use NDFD QPF grids operationally. Based on recent experience with NDFD QPF grids, issues such as discontinuities at political boundary	Note: No decision has been made to utilize WFO NDFD QPF at the RFCs. GFE will continue to be tested at RFCs.

		and uncoordinated forecasts still exist and may be more problematic than during the WinQPF era. Some of our WFOs tell us they do not have time to coordinate QPF grids and some never look at HPC QPF. In addition, there are training and operational overhead issues related to RFCs implementing GFE. What is OHDs position in the matter of QPF and what support role will they play with GFE?	
QPE/MPE	Panel Discussion Q2	6. The NPVU posts 6-hrly and 24-hrly gridded QPE on their website. Inspection of this information reveals significant problems with methods used to produce QPE at some RFCs. The national dataset is an embarrassment to the NWS and use of the dataset for research, development and various tasks would be problematic. OHD has been improving PPS algorithms for over ten years yet other applications such as QPESUMS, Mountain Mapper and P3 are still in use and are producing more realistic precipitation fields. How is OHD addressing the problems with MPE and where is NWS going in the future as far as QPE is concerned?	Note: QPESUMS, MPE, and Mountain Mapper and combinations are being developed and tested. Dave & D.J. are looking at it.
	Discussed some with Panel Discussion Q1 More notes here	7. The majority of the WFOs do not monitor, QC or otherwise "run" MPE operationally. We have heard that one option to assist in this area is to have RFCs send bias correction factors to the WFOs for use in MPE. However, a bias correction will only raise or lower a DPA field and will not address issues of eliminating use of "bad" ground truth reports (precip obs), bright banding and other similar frozen precip problems and numerous other problems from MPE including polygon precip patterns from radar climatology artifacts. This situation presents great difficulties in any plan that provides for the WFOs to use	The MPE Operations Team (an RDM team) led by Greg Story at WGRFC is looking into technical ways to keep MPE up to date at WFOs using the QC work done by RFCs. The other part of the equation is an MPE Operations Concept team to really define how MPE should be used at RFCs and WFOs. The HSD Chiefs were to vote on whether to form the team at their June conference call.

		QPE for ingest to the Site Specific Model (SSM). The other WFO tool to aid in the hydro warning program is FFMP. However, FFMP uses the DHR product. But as far as we know, there is no tool to allow the WFOs to QC, monitor or otherwise interact with the DHR product. What you see is what you get. In addition, the WFOs we talk with tell us they or the staff really do not have time to "run" applications to modify/improve raw radar estimates anyway. In light of these difficulties mentioned above for the use of SSM and FFMP, where is the NWS Hydro Program going in order to provide better service in the flash flood warning area?	
	Covered in Panel Discussion Q3	44. Are there plans to incorporate QPESUMS into MPE?	Note: QPESUMS, MPE, and Mountain Mapper and combinations are being developed and tested. Dave & D.J. are looking at it.
Distributed Modeling	Tues. am Session Topics 11a(i-iii) Presentations	8. What are the near-term plans beyond current demonstrations for implementing distributed modeling at the RFCs and WFOs?	
	Thurs. am session Topic 21a presentation	25. How will distributed modeling for short range forecasts be incorporated into modeling for long range ESP forecasts, or will it?	
	Panel Discussion Q19 Tues. pm	59. Currently, the DMS testing has been limited to head-water basins. Also, the current method for integrating DMS simulations into our operational system is “clunky” and deficient with regard to making real-time operational modifications necessary for quality controlled forecasts. What	Note: More discussion later in the meeting. Yes, there are plans to develop parameter estimation techniques. Routing capability will be available.

	Topic 11 presentations	is the time frame for developing an "IFP-like" system for integrating DMS simulations with routing techniques to allow flow simulations throughout an entire stream system? As DMS is transitioned into the RFCs, it will be necessary to calibrate many basins. A-priori estimates of SAC-SMA parameters are a great start in the calibration process, but trial-and-error calibration alone is slow and tedious. Are there any plans to incorporate parameter estimation algorithms or optimization techniques as a tool to enhance and speed the calibration process for DMS?	
CHPS	Wed. am Topic 14 presentation	9. The concept of CHPS is good. Are significant resources being invested in CHPS in order to promote implementation in the next few years?	
	Same as Q9 above	12. Could you give us an update of what has come of the APEX project to redesign the operational forecast system infrastructure and if future budgets have been approved to implement their plans in a reasonable time frame?	
	Panel Discussion Q10	22. There are countless examples of community based software development internationally of open source software. Why is it that OHD can not use this model for software development with RFCs? The world?	Note: nothing recorded
AHPS – Long Term Probabilistic Forecasts	Panel Discussion Q4	10. AHPS baseline service implementation mandates long term ESP forecasts be produced for all forecast points. In our area, except for river forecasts from high elevation snow melt, we cannot generate any interest in long term ESP forecasts. Recognizing that we are supposed to be meeting customer requirements, why are we mandated to implement long-range	Note: It is acknowledged that there are AHPS products that are not relevant. Standardization of the products could be creating some of the problems.

		probabilistic forecasts for points without a customer requirement? Could these valuable resources (AHPS funds and RFC staff) not be utilized more effectively?	
	Same as Q10 above	56. Echo the sentiment that long term probabilistic forecast is not the most useful AHPS product for the entire country.	
AHPS Web Pages	Panel Discussion Q13	11. The AHPS web page hydrographs have been available for quite some time now. It has long been established that there are numerous deficiencies with the display of these hydrographs and related quality control issues. These problems make hydrographs hard to read/comprehend and also can be quite confusing. It seems the team that works on these issues are moving at a snail's pace. What plans are there to speed up the process of improving the hydrographs, quality control and other issues to clean up this embarrassing display of information to the public?	Note: External users and field folks would send requirements that would drive the evolution of the AHPS web page. A specific process has been proposed. Additional Note: Plan to have new hydrograph generation software by end of FY04
	Panel Discussion Q14 (and here)	30. Some of us have long contended that the best way to provide AHPS services would be for the RFCs to make the model runs and database the results and for the customers to be provided a user interface so that they can tailor the analysis of those results to satisfy their own particular needs. Please describe the progress currently being made in this arena?	Note: See Donna's action item (to provide hydrograph requirements doc from IWT) Additional note: This is along the lines of the APIT report recommendation and is currently demonstrated on CBRFC website. National implementation of the capabilities require major web farm infrastructure upgrades and agreements. These do not come until money is allocated – it has not been funded the last 2 FYs by the Financial Investment Review Committee of the NWS Corporate Board. Until then, website updates will focus on things that can be done within the current infrastructure – i.e. updating the deterministic hydrograph.

	Same as Q11 above	39. It is well known that the current baseline AHPS hydrographs are of poor quality at best. What plans are being made to make significant enhancements to AHPS baseline hydrographs and why has a relatively minor task taken so long to accomplish?	
AHPS Budget	Panel Discussion Q16	40. The AHPS budget is rapidly becoming depleted by non-RFC offices and non-hydrologic programs. What steps are being taken to ensure that future AHPS funds will be equitably distributed to all RFCs?	Note: Detailed budget summary was provided to Regions.
	Covered in Panel Discussion Q16	55. The $3K per AHPS forecast point is an insufficient amount of money for model development and calibration, especially in the case where reservoir regulation is in play. Has that realization reached the ARC?	
Science & Operations	here	13. While I assume that publications in technical journals, attendance at various conferences, and similar academic pursuits are worthwhile, I, as a forecaster would like to see new technology more rapidly available to the field offices. How do you balance these two objectives.	One thing OHD is working on is a new process, the Hydrology Operations and Service Improvement Process (HOSIP) based on the emerging NWS OSIP. This should account for science and technology from the idea stage thru to operations to ensure the field gets scientifically valid, operational applications. How to balance the time spent on academic pursuits and development is always a question – we must engage in a dialog with the research community to ensure we are moving in the right direction to improve our forecasting science. George Smith as Hydrology Lab Director and Pedro Restrepo as OHD Senior Scientist monitor these activities and help to decide on the proper balance.
Site Specific	Panel	14. There appears to be a disconnect between the fielding of	Note: FFMP- there is an attempt to give the WFOs more

FFMP	Discussion Q5	WFO hydrologic forecasting tools and the capability of the RFCs to support these tools. The two obvious ones are FFMP and the Site Specific. While the RFCs continue to struggle to produce worthwhile FFG values, the WFOs are ready to use the FFMP and the current FFG values, poor as they may be. The Site Specific capability at the WFOs is coming along yet nobody has figured out how the RFCs are supposed to interact with, or support, this program.	flexible tools. Site Specific SAC-SMA limitation will go away in OB4. Do the RFCs need FFMP? It was suggested that it might not be worth the effort. Gridded FFG is displayable on AWIPS today…maybe this is good enough.
	Covered in Panel Discussion Q5	16. Why is the national hydrologic program delivering systems which are not fully developed? For example, the SAC-SMA version of the Site Specific?	
	Covered in Panel Discussion Q5	20. RFCs are expecting to support WFOs during times of Flash Flooding, yet FFMP is unavailable to RFCs. Why is this? RFCs should not be needlessly crippled in our attempts to do our jobs.	
Deterministic Forecasts	Here	15. Is the deterministic forecast procedure headed toward extinction?	Not in the foreseeable future. We will need to produce them until we research, build, implement, and validate probabilistic forecasts that meet our customer's needs.
RFC resources – structure	OCWWS/ HSD will respond later	18. 15 years ago we defined the structure of the River Forecast Centers. Did we get it right? Do we have the human resources to meet all the product and services we are now promising? What type of resource assessments are being made as we continue to add services?	
Hydraulics	Panel Discussion Q9	19. With declining budgets and with the pressure for inter- and intra-agency cooperation, why does OHD continue with FLDWAV development when many (or most) RFCs have found	Note: It was agreed that better visualization tools are needed for FLDWAV. A DMIP-like comparison of hydraulics models was suggested to help answer the

		USACE HES-RAS & HEC-GeoRAS to be much more advanced, much easier & less costly to implement, physically more realistic, support is much more responsive, documentation is far more superior, and training much more accessible. Economies of scale would suggest that money to support FLDWAV development would be better spent supporting the USACE HEC to meet NWS requirements.	questions.
Planning Process	Here	21. The underlying theme coming from the DOHs is the need for RFCs to be equal partners in both the planning of the future of the hydro services program and in development projects. What are your comments?	Response: Agree – need to incorporate more input from the DOHs. The emerging Hydrology Operations and Service Improvement Process identifies several places where DOH input will be critical. Welcome the DOH Science Steering Team as a conduit for exchange of ideas and feedback.
GIS	Panel Discussion Q20	23. What are the long range prospects of using ARCGIS and ARCHYDRO?	
	Panel Discussion Q20	41. What is HSD/OHD's position on the GIS platform issue… GRASS vs ESRI? And what is the discussion flavor at the Corporate Board level regarding this issue?	Note: NOAA is negotiating with ESRI for a NOAA license. An answer will probably be available before the end of the calendar year. There is work to convert FLDVIEW to LINUX.
	Covered in Panel Discussion Q20	49. Why can't the NWS get tuned in to the movement in Water Resources toward utilization of ArcGIS and related software?	
	Panel Discussion Q21	60. GIS software/support: What is the time frame for the NWS to make a decision on the adoption of GIS software for agency-wide use and application. Is the NWS conferring with other federal agencies (ie. USGS, COE) that are years ahead in GIS	

	Fri. am session Topic 29a presentation	experience to find what is working for them? USGS has an enterprise agreement with ESRI and has established a GIS support team at headquarters level for dealing with internal GIS issues and contacting ESRI for support. This type of structure has worked well for them.	
Rating Curves	Fri. am session Topic 27a presentation	24. What is the status of the national initiative to make available to all RFCs current ratings, rating shifts, and rating adjustments from the USGS?	Additional Note: Experimental website available for latest shifted ratings for 10 states (soon 14). Mike Deweese sent message to rfcawips asking for IP addresses from RFCs who wished to check it out.
Data	Tues. am session Topic 4 presentation	27. The constant budget reductions to other government agencies pose a real threat to our stage data network. The National Weather Service, the primary agency responsible for providing river forecasts, contributes a negligible amount towards the cost of gaging stations, telemetry, the physical maintenance of the gages, and the development and maintenance of stage-discharge relationships. As a result, the RFCs far too often are required to provide forecast services without the benefit of observed stage data. What NWS efforts are underway or planned for maintaining and improving the gage network?	
	OCWWS/ HSD will contact Observing Systems	47. Can you provide a timeline which indicates when COOP modernization will occur at various locations (states)?	
	OCWWS/ HSD will contact Observing	48. What type of rain gage will be installed as part of the COOP modernization, and will this be the same for all parts of the country?	

	Systems		
Reservoirs	Touched on in Panel Discussion Q4 More here.	26. Many other government agencies that have the responsibility to regulate flows do not have simulation models to predict how they would regulate their own structures or system of structures, yet the RFC is tasked to develop models that are to simulate their regulation. How does the RFC reconcile developing and maintaining these models for long range prediction of regulated streamflow when it impairs the development of other forecasting tools, including distributed modeling, needed to improve more vital short range flood forecasts?	There is an AHPS Streamflow Regulation Accounting project underway to try to answer some of these questions. The project is focused on the development of a strategy for AHPS implementation for river basins where the regulation of streamflow is substantial. This strategy will enable RFCs to effectively account for the effects of this regulation in their conditional simulations in ESP and thereby provide consistent, accurate, science-infused long-range probabilistic forecasts. Status of this project can be found at http://www.nws.noaa.gov/oh/ahps/ in the Quarterly Status Report and detailed information is available at the project website at: http://www.nws.noaa.gov/oh/hrl/rvrmech/streamflow.htm
SCH	Panel Discussion Q12	28. The creation of a Service Coordination Hydrologist (SCH) position at each RFC has been recommended. What is the status of this proposal?	Note: SCH position is being reviewed by the union. WR is coordinating this.
	See Q28 above	54. What are the plans and status of establishing a hydro outreach person at each RFC?	
Training	Panel Discussion Q15	33. One action item from the last DOH meeting, and also elevated thru the SFA process was to have OHD deliver periodic teletraining for the RFCs. When will this happen? This would be useful for new NWSRFS releases, new AWIPS releases, and general science topics. Potentially, you could even take sections of existing workshops and make them available via teletraining.	Note: Requirement has been submitted to provide teletraining coincident with AWIPS releases. See action item for Jeff Z.

Rumors	here	34. I have heard a lot of discussion recently concerning budget problems, particularly beginning in FY06 that may force some hard decisions in the agency. There have been plenty of rumors concerning impacts on the WFOs, but I have not heard a lot concerning potential impacts to RFCs. What options are being looked at that would have a direct impact on RFCs?	There are always budget rumors going around. We do not spend much time on them - we have plenty to do to track the actual budget and plan in the PPBES system. We do become involved when asked by higher authorities to do the occasional budget exercise to assess impacts of an x% increase or decrease.
	here	37. Rumors abound of a Super WFO covering RFC areas of responsibility. If this reorganization occurs, what is the expected timeframe; and, what impact will this realignment have on current RFC operations, and more importantly, on RFC staffing?	Again, this is a rumor. We haven't heard anything to cause anyone to take action to plan for this.
	here	52. Included in these rumors are talks of office consolidation at the WFO level, and possibly extending to the RFCs. Any information?	We have no information – we haven't heard the rumors. See above.
General Budget and Funding	here	50. Why is NOAA funding the University of Washington to provide Water Supply Forecasts for the Columbia River using ESP?	The abstract of the U. of Washington work funded by the Office of Global Programs in the Columbia river indicates they are using NCEP's GSM-model ensemble forecasts, adjusted to remove bias, in order to drive their Variable Infiltration Capacity (VIC) model, in order to arrive at a probabilistic long-term forecast of Columbia river inflows. If a comparison of the results of the UW model with NWS forecasts indicates that the UW model performs better, that does not mean that the NWS forecasters are less capable than the UW forecasters, but it may indicate that the UW approach (i.e. GSM ensembles being corrected for bias and fed into the VIC model) is worth looking into by

			OHD. We shouldn't be afraid of other people using models different from the ones in NWSRFS to do forecasts. It would be safer for the UW to play in "Reforecast" mode rather than on real time, but if they want to do it on real time, they should. I don't see that as competition.
	here	51. Rumors abound about declining budgets in FY 05 and 06. Any insight how this will affect the hydrology program (including AHPS)?	See answer to question 34.
	Panel Discussion Q18	57. It seems that a disproportionate number of OH resources have gone towards the development of hydrologic software for the WFOs. What will it take to modernize the RFC applications for data presentation, calibration, forecasting?	Note: It is just a perception. Large “flash” development projects for WFOs probably contribute to this perception. Development for RFCs has been in more of an incremental form.
GFE	Covered in Panel Discussion Q1	35. For the past 1 1/2 years I have been hearing that RFCs were going to be getting GFE "soon". Every time I turn around there is another delay or white paper being developed to study the issue. What is the current status of this?	
	Covered in Panel Discussion Q1	42. What is the timetable for implementing GFE at RFCs?	
Official Forecasts	OCWWS/ HSD will respond later	38. There is great concern that some in the NWS community are increasingly treating RFC river forecasts as guidance as opposed to official river forecasts. Does HSD/OHD think RFC river forecasts should just be treated as guidance, which is easily prepared, or should a RFC river forecast be considered the official forecast? (There is a big difference between generating	

		the official river forecasts and disseminating official forecasts. RFCs should be considered the river forecast experts....and not the WFOs.)	
NWSRFS Overhaul	Panel Discussion Q11	43. What is the timetable for converting NWSRFS to informix?	Note: Relational database will almost certainly remain. Side Note: Jon Roe has sent updates from various AWIPS meetings to rfcawips listerver with information to plans to convert from Informix to Postgres
	Panel Discussion Q11 Wed. am session Topic 14 presentation	45. We have heard from OHD in the past about sweeping changes to NWSRFS including its possible replacement. However, up to this time, changes have been in the patching category more than in the fundamental shift realm. How can the problems which have prevented these major changes from occurring in the past be avoided in the future so that proposals on a grand scale have an improved chance for success?	
24 Hour RFC Operations	Fri. am session Topic 27a presentation	53. Has there been any further activity in the arena of 24 hour RFC coverage since the RFC Operations team presented their findings?	
Baseline code checkout	Covered in Panel Discussion Q10 Also, Fri am Topic 27b	58. What happened to the concept of "checking-out" baseline software for local modification, and providing the enhanced application back to be implemented into AWIPS?	
General	Fri. am session Topic 27a presentation	31. What is the status of the recommendations from the APIT, FFG Improvement, NDFD Preprocessor and RFC Operations team reports?	

	Also, FFGIT status in Wed. pm session		
	Provided during Tues. pm. and Thurs. pm sessions Also, Panel Discussion Q17	46. Forecasters would like some timelines of some of the new science: Distributed Modeling, SSHP (model state updating), Verification, etc.	Note: Much of this new science will be discussed this meeting.
NRCS – NWS Relationship	here	61. Revisit Our(NWS) Joint Forecast Responsibility With the NRCS Six River Forecast Centers (CNRFC, CBRFC, NWRFC, MBRFC, WGRFC,APRFC) have a joint forecast responsibility for seasonal streamflow forecasts with the NRCS. This has existed since (at least) 1949. There are good reasons why this joint responsibility developed: (1) the NRCS (formerly the SCS) had a different clientele, i.e. smaller basins, (2) the lack of computerization made it more economical to have more human forecasters and spread the work out, (3) the NRCS(SCS) monitors and supports the snow program in the higher elevations with snow courses and SNOTEL (and forecasts for small basins grew out of this). Some of us believe that the time has come to take a critical look and revisit this relationship in light of the modernized RFCs, the thrust of AHPS, the improved and increased use of the	1. NRCS has a statutory responsibility to provide water supply forecasts - so Congress would need to be in the loop if NRCS withdrew. However there is no reason NRCS should not consider more efficient ways of fulfilling its responsibility. 2. There is a Policy Group established under the Joint NWS/NRCS Water Supply Forecasting Agreement to consider such questions. OCWWS represents NWS on the Policy Group. This question will be passed to OCWWS/HSD to raise through policy group. 3. OCWWS/HSD should report back on this issue to the Agreement's Technical Working Group and through regular NWS communications to affected parties in sufficient time to implement any necessary changes prior to the water supply forecast season of early 2005.

		Statistical Water Supply Forecast System and vastly increased use of ESP. The human resources that the NWS now have coupled with the improved data sets, modeling capabilities and the push to couple climate forecasts quite frankly have 'left the NRCS in the dust'. It has been harder to maintain forecast consistency when, e.g, a user wants daily, weekly or mid month updates and we are able to provide them using ESP.. but... they do not 'jive' with the previous monthly volumes that were decided upon in the joint forecast process. Another example is that when a large storm 'hits' betweens forecast periods, we are able to quickly adapt and could put out revised forecasts. The NRCS is lacking in this capability. In a sense our 'hands are tied' and we cannot push ahead using the capabilities that ESP and up to date data sets possesses. Further, it does not make sense for the few human resources that the NRCS possesses to maintain their 'own' ESP like system with all the required infrastructure. Recommendation: Meet and renegotiate with the NRCS. Allow the NWS to become the primary resource of all types of surface water forecasts, including daily, weekly and seasonal runoff volumes. This would allow us to put out forecasts as needed by users. Treat the NRCS as a valuable, technical customer and provide to them tailored forecasts for projects and areas that they may need. They have a great outreach through their local offices. If this is not feasible and alternative would be to allow agencies to produce a set of forecasts, e.g., a 'joint' seasonal volume, a NWS suite of forecasts, and a NRCS suite of forecasts.	

		I want to reiterate, the NWS cannot move ahead in AHPS and the area of forecasts for water management as long as we are ‘mandated’ to coordinate with the NRCS and maintain consistency with daily, weekly, monthly and seasonal volume. Please address.	