From:	RILEY, Jim
To:	Shams, Mohamed; Marshall, Michael
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Subject:	[External_Sender] FW: MSA Draft Scope and Template - DRAFT rev 0f 02-19-16 (comments accepted).docx
Date:	Sunday, February 21, 2016 8:21:36 PM
Attachments:	image001.png image002.png MSA Draft Scope and Template - DRAFT rev 0f 02-19-16 (comments accepted).docx

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Michael, Mo;

Here is the finished version of the G.4.1 example with plant names removed. This completes our set of MSA examples. We will work with you to resolve any comments you send us on these documents.

Jim Riley

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From: Warren.H.Jones@aps.com [mailto:Warren.H.Jones@aps.com]
Sent: Friday, February 19, 2016 6:23 PM
To: RILEY, Jim
Cc: Michael.Powell@aps.com; James.Shannon2@aps.com
Subject: MSA Draft Scope and Template - DRAFT rev 0f 02-19-16 (comments accepted).docx

Attached please find the G4.1 template [redacted]. Sorry for the delay.

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2016 Mitigating Strategies Assessments for Flooding
Documentation Requirements
(DRAFT)

Acronyms:

- MSFHI – Mitigating Strategies Flood Hazard Information (from the FHRR and MSFHI letter)
- FHRR – Flood Hazard Reevaluation Report
- DB – Design Basis
- AMS – Alternative Hazard Mitigating Strategies
- THMS – Targeted Hazard Mitigating Strategies
- FLEX DB – FLEX Design Basis (flood hazard)
- PMF – Probable Maximum Flood
- PMP – Probable Maximum Precipitation
- LIP – Local Intense Precipitation
- ELAP – Extended Loss of AC Power
- LUHS – Loss of Ultimate Heat Sink

Definitions:

FLEX Design Basis Flood Hazard: the controlling flood parameters used to develop the FLEX flood strategies.

1. Summary
   The overall strategy for the storage and deployment of FLEX equipment is unaffected by the results of the FHRR and can be implemented as designed. Specifically LIP and PMP, do not impact site FLEX capabilities. Details of the FLEX strategies along with bounding flood will be discussed later in this document. Therefore, the current FLEX strategies can be deployed fully with no additional operator actions or pre-staging additional equipment.

2. Documentation

   2.1. NEI 12-06, Rev. 2, Section G.2 – Characterization of the MSFHI (all licensees need to complete)

   The plant identified no issues associated with flood-causing mechanisms from PMF on the East or Winters washes, or LIP. Other mechanisms such as dam failure Storm Surge, Seiche, Tsunami, Ice-Induced Flooding, and Channel Migration Diversions have no impact on the site (Reference NRC Letter ML15280A022).

   2.2. NEI 12-06, Rev. 2, Section G.3 – Comparison of the MSFHI and FLEX DB Flood (all licensees need to complete)

   The Current Licensing Basis for the plant states that the site is considered a “Dry Site” (Reference UFSAR section 1.8, response to Regulatory Guide 1.102). It continues in section 2.4.3 stating in part, “Areas adjacent to the power block are sloped away at 0.5 to 1%. This results in a minimum drop of 5 to 7 feet at the peripheral drainage system, as compared to the grade elevation at each unit.” And, “The volume of water in the vicinity of the power block area consequent to a 6-hour PMP is based on zero infiltration losses and a complete blockage of the drainage culverts for the storm

duration." Table 1 reflects data from the MSFHI for each applicable flood-causing mechanism that are bounded or comparable to the site's Design Basis/FLEX Design Basis flood.

Table 1 – Flood Causing Mechanism A or Bounding Set of Parameters

	Flood Scenario Parameter	Plant DB Flood	FLEX Design Basis Flood Hazard	MSFHI	MSFHI Bounded (B) or Not Bounded (NB) by FLEX DB
Flood Level and Associated Effects	1. Max Stillwater Elevation (ft. MSL)	962.8 at "A1" 954.7 at "B" 944.0 at "C"	Same As	963.4 at "A1" 955.2 at "B" 946.2 at "C"	Comparable (see foot note #1)
	2. Max Wave Run-up Elevation (ft. MSL)	964.6 at "A1" 956.5 at "B" 945.8 at "C"	Same As	964.78 at "A1" 956.58 at "B" 947.58 at "C"	Comparable (see foot note #2)
	3. Max Hydrodynamic/Debris Loading (psf)	Did Not Specify	Same As	NA (see foot note #3)	NB (see foot note #3)
	4. Effects of Sediment Deposition/Erosion	See foot note #4	Same As	Screened Out	B
	5. Other associated effects (identify each effect)	None	Same As	None	B
	6. Concurrent Site Conditions	None	Same As	None	B (see foot note #6)
	7. Effects on Groundwater	None	Same As	None	B
Flood Event Duration	8. Warning Time (hours)	0	Same As	0	B (see foot note #8)
	9. Period of Site Preparation (hours)	None	Same As	None	B
	10. Period of Inundation (hours)	0	Same As	0	B (see foot note #10)
	11. Period of Recession (hours)	None	Same As	None	B
Other	12. Plant Mode of Operations	No Restrictions	Same As	No Restrictions	B (see foot note #12)
	13. Other Factors	None	Same As	None	B
	Additional notes, 'N/A' justifications (why a particular parameter is judged not to affect the site), and explanations regarding the bounded/non-bounded determination. 1. Flooding hazard information is from the East Wash (Reference FHRR, Table 4-3). Although the values in the FHRR are slightly higher than the DB, they are comparable to the DB, since the refined analysis determined that both the north and east embankments of East Wash were not overtopped. 2. Flooding hazard information is from the East Wash (Reference FHRR, Table 4-3).				

	Although the values in the FHRR including wave run-up are slightly higher than the DB, they are comparable to the DB, since the refined analysis determined that both the north and east embankments of East Wash were not overtopped. 3. Hydrodynamic loading is the maximum load at safety-related structures (Reference FHRR, Table 4-4). Debris loading screened out qualitatively based on flow depths, flow velocities, and flow directions predicted by the FLO-2D model for the powerblock area (Reference FHRR, section 3.2.1.3). This value is not applicable to MSFHI since there are no Safety related structures within the site that is subject to hydraulic loads. 4. Scour due to sediment transport during river flooding was evaluated and screened out (UFSAR Section 2.4.10) (Reference FHRR, Table 4-4). 5. None. 6. Bounded by item 2 7. None. 8. Since affects from flood causing mechanisms will not impact safe shutdown equipment, the plants capability to achieve cold shutdown will remain the same as the existing design and licensing bases. There are no additional risk due to flooding for an unplanned shut downs. 9. None. 10. Power block is not inundated as a result of any flooding event (Reference FHRR sections 2 and 3). 11. Rain water runoff will collect in the drainage ditches and will completely recede by mostly discharging into the realigned East Wash (Reference UFSAR 2.4.2.2.2). The plants will continue to run safely and be stable throughout the event, and can be maintained indefinitely. At 24 hours into the event, hauling routes will be accessible, allowing equipment to be hauled with existing FLEX vehicles to their designated deployment locations, if FLEX equipment is needed. 12. The plants can be in any operating mode during any of these flooding events. 13. None.

2.3. NEI 12-06, Rev. 2, Section G.4 – Evaluation of Mitigating Strategies for the MSFHI

2.3.1. NEI 12-06, Rev. 2, Section G.4.1 – Assessment of Current FLEX Strategies (all licensees need to complete)

The overall FLEX planned response to an ELAP and LUHS will be initiated through normal plant command and control procedures and practices. Site emergency operating procedures (EOPs) or abnormal operating procedures (AOPs) govern the operational response. The FLEX strategies will be deployed in support of the AOPs/EOPs using the FLEX Support Guidelines (FSGs), which will provide direction for using FLEX equipment in maintaining or restoring key safety functions.

2.3.1.1. Site flood hazards associated with the parameters of the MSFHI that are comparable to or are bounded by site's Current Licensing Basis."

2.3.1.2. Conclusions

The current FLEX strategies can be deployed as designed as submitted in the Final Integrated Plan. Ponding of rain water runoff at the peripheral drainage system will have receded sufficiently after 24 hours to allow hauling of equipment with existing FLEX vehicles to their designated deployment locations. The first of this equipment, deploying after 24 hours, will be the 480 VAC generators (Reference FLEX Support Guidelines). A minimal amount of accumulation (ponding from rain water runoff) near the facilities is expected which will not impede the operation the FLEX equipment. No other applicable flood-causing mechanisms will affect the hauling routes of FLEX equipment. Flooding event during lower modes is assessed by the shutdown risk assessment when an outage is being planned. Since the site pre-deploys FLEX equipment during the lower modes, the hauling routes do not need to be available at the start of the events when a unit is in an outage. Additionally, the need to start FLEX pumps and generators is not required until 38.5 hours into the event (Reference FLEX Support Guidelines).