



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NORTH ATLANTIC DIVISION, CORPS OF ENGINEERS
FORT HAMILTON MILITARY COMMUNITY
BROOKLYN, NY 11252-6700

CENAD-PD-X (CSRM-PCX)

6 Aug 2018

MEMORANDUM FOR Commander New York District, U.S. Army Corps of Engineers
(CENAN-PL-FC / Karen Baumert)

SUBJECT: Final Comment Response Record for the Independent External Peer Review (IEPR) for the Passaic River Tidal Protection Area, New Jersey, Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Assessment (HSGRR/EA), Coastal Storm Risk Management (CSRM) Project

1. References:

- a. EC 1165-2-217, Review Policy for Civil Works, 20 February 2018.
 - b. Type I Independent External Peer Review Process Standard Operating Procedure, Version 3.0, August 2016.
 - c. Memorandum, CENAD-PD-X (CSRM-PCX), 13 April 2018, subject: Transmittal of Final Independent External Peer Review (IEPR) Report for the Passaic River Tidal Protection Area, New Jersey, Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Assessment (HSGRR/EA), Coastal Storm Risk Management (CSRM) Project
2. Enclosed is the comment response record for the Independent External Peer Review (IEPR) for the Passaic River Tidal Protection Area, New Jersey, Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Assessment (HSGRR/EA), Coastal Storm Risk Management (CSRM) Project.
3. The Coastal Storm Risk Management Planning Center of Expertise (CSRM-PCX) coordinated the IEPR, which was managed by Battelle Memorial Institute. The IEPR panel comments are documented in the Battelle Report titled Final Independent External Peer Review (IEPR) Report, for the Passaic River Tidal Protection Area, New Jersey, Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Assessment (HSGRR/EA), Coastal Storm Risk Management (CSRM) Project, dated 10 April 2018.
4. Eleven IEPR final comments were developed by the panel, none of which were identified as having high significance. The comment response record documents the New York District responses to the panel comments and the IEPR panel backcheck of the responses. Concurrence was reached between the panel and District on all 11 responses; however, the panel provided clarifying statements as part of its concurrence with the District response to the final panel comments 1, 2,3,5,7, and 11.

SUBJECT: Final Comment Response Record for the Independent External Peer Review (IEPR) for the Passaic River Tidal Protection Area, New Jersey, Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Assessment (HSGRR/EA), Coastal Storm Risk Management (CSRM) Project

5. Based on the comment response record, the New York District should prepare a written proposed response to the Final IEPR Report in accordance with reference 1a. The proposed response should be coordinated with the Major Subordinate Command District Support Team and HQUSACE to ensure consistency with law, policy, project guidance, ongoing policy and legal compliance review, and other USACE or National considerations.

6. For further information, please contact Mr. Larry Cocchieri, Deputy, planning CSRM-PCX at (347) 370-4571 or Ms. Anastasiya Kononova, the CSRM-PCX IEPR Lead for this effort, at (410) 962-2558.

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Encl

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Passaic River Tidal Protection Area, New Jersey, Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Assessment, Coastal Storm Risk Management Project

Comment Response Record (Final PDT Evaluator Responses and Final Panel Backchecks)

Prepared by

Battelle
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Columbus, Ohio 43201

Prepared for
U.S. Army Corps of Engineers
Coastal Storm Risk Management Planning Center of Expertise
Baltimore District

Contract No. W912HQ-15-D-0001
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July 2, 2018

Final Panel Comment 1

The feasibility report lacks a description of the interior drainage system, how it was designed, or its impacts.

Basis for Comment

The interior drainage system is located in a densely developed area and must be integrated into existing infrastructure. There are likely to be multiple alternatives that should be considered and compared using the USACE six-step planning process. There are two key reasons for providing a clear description of the planning process used to develop the interior drainage system design:

- The interior drainage system is critical to the functioning of the Tentatively Selected Plan (TSP) and represents a substantial portion of the total project cost. Flood damages in the study area may be caused by either tidal surge or by stormwater runoff produced by a severe rainfall event. The TSP is designed to protect against tidal surge. The interior drainage system should be designed to maintain, or reduce, the existing flood risk associated with stormwater runoff. If the interior drainage system design reduces the risk of flood damages caused by stormwater runoff, the TSP benefits could be increased.
- Pump stations are normally included in a drainage plan only when there is no alternative. Pump stations require significant construction costs and operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) costs. In order for the system to function properly, the non-Federal sponsor must be capable of meeting the complex and demanding OMRR&R requirements.

Without an understanding of how the interior drainage system was designed and what its impacts will be, the Panel cannot determine whether the TSP provides the anticipated project benefits in the most cost-effective manner and with minimum adverse impacts.

The following information would provide justification for the interior drainage system:

- A description of the existing drainage system, if any
- The alternatives that were considered for interior drainage
- How the TSP interior drainage system was selected
- The impacts on resources, such as
 - Hazardous, toxic, radioactive waste (HTRW)
 - Environmental justice
 - Wetlands
 - Water quality
 - Existing stormwater infrastructure (culverts, swales, drainage systems)
- The OMRR&R requirements and the non-Federal sponsor's ability and willingness to perform them.

Significance – Medium/High

Providing a description of how the TSP interior drainage system was designed will support the conclusion that the TSP provides benefits in a cost-effective manner without unacceptable adverse impacts.

Recommendation for Resolution

1. Provide a detailed description of the planning process, similar to the list above, that led to the TSP interior drainage system design and its impacts.

PDT Final Evaluator Response (FPC #1)		
	<input checked="" type="checkbox"/> Concur	<input type="checkbox"/> Non-Concur
<p>The interior drainage system is currently under development utilizing a HEC-HMS model. The previous analysis for the NED plan did not extend sufficiently into the interior of the risk management area to model that area as part of the NED plan.</p> <p>We did not have detailed interior drainage information in the draft report because we were following SMART Planning principles to get to the TSP and will include more details in the final report.</p>		
Recommendation 1:	<input checked="" type="checkbox"/> Adopt	<input type="checkbox"/> Not Adopt
<p>The Final Report and PED designs will include a full description of the planning process, similar to the list above, that led to the TSP interior drainage system design and its impacts.</p> <p>First Bullet: Stormwater within the project area is typically handled by a CSO system, which drains to the nearby Passaic Valley Sewage Commission plant at Newark Bay. The system includes regulators and CSO outfalls which divert combined flow to the Passaic River and Newark Bay when the system capacity is exceeded during large rainfall events. The project area is subject to backwater flooding during large rain events in combination with high tide or storm surge.</p> <p>Current status of Second & Third Bullets: The LPP includes shorter wall segments which tie off to high ground features in the project area. The wall segments span roadways but, in general, do not cut off a significant portion of overland flow that would normally drain to the Passaic River, Newark Bay, or the Peripheral Ditch near Newark Liberty Airport. Therefore, initial indications are that most of the residual flooding will not occur as a result of construction of the LPP.</p> <p>The Interior Drainage analysis will be refined to evaluate how the proposed drainage features will interact with the existing regulators and storm overflows. The Passaic Valley Sewerage Commission (PVSC) has developed an INFOWORKS Model to assess subsurface drainage and operational controls for the entire PVSC tributary area. This model is currently being substantially revised by PVSC. The current version of the INFOWORKS Model does not include any terrain or connectivity to allow evaluation of surface flow and is unknown if the ongoing updates will incorporate this capability.</p> <p>For PED it is anticipated that the design will utilize the updated INFOWORKS Model with modifications to allow analysis of surface flow using a 2-D terrain. If for some reason the updated INFOWORKS Model is not available or is deemed in-appropriate for use in evaluating the interior drainage surface flooding, the alternative approach will be to model the surface runoff using a 2-D HEC-RAS Model with estimates of the amount of flow conveyed in drainage system based on the best available subsurface INFOWORKS Model.</p> <p>The need for model refinements during PED and approach will be added to Section 4.7 as recommended.</p>		
Panel Final BackCheck Response (FPC # 1)		
	<input checked="" type="checkbox"/> Concur	<input type="checkbox"/> Non-Concur

SMART Planning is a risk-based approach in which the risks associated with a planning decision is assessed to determine the appropriate level of effort for the analysis. In this case, the risk associated with identifying the appropriate TSP without a specific plan for interior drainage is high relative to the total project cost and the plan's impacts. Therefore, it is prudent that the PDT is pursuing a more detailed planning process to identify the optimum interior drainage plan to be included in the TSP.

Final Panel Comment 2

The rationale for choosing the LPP over a relatively comprehensive NED plan is not clearly defined in the feasibility report.

Basis for Comment

The HSGRR/EA selects (p. 86) a LPP with an extremely limited scope within the study area with no prior consideration of a similar plan. The “Focused Array of Alternatives” discussion (HSGRR/EA Section 4.8, p. 80) includes only variants of the authorized plan. The move from the National Economic Development (NED) plan to the LPP occurs abruptly and seems to be based solely upon a November 18, 2016 letter from the NJDEP, the non-Federal sponsor. According to the HSGRR/EA (p. 86), the NJDEP letter (which the Panel members could not find in the project documentation) “proposed that the Newark Flanking component of the project be considered as a stand-alone flood risk management project ...” The HSGRR/EA further indicates that the NJDEP letter stated the high benefit-cost ratio and the lesser chance of encountering HTRW within the project footprint as reasons for supporting the Newark Flanking component.

In addition, the kick-off presentation for the IEPR (slide # 53) indicated some uncertainty about whether the TSP is proposed as a complete stand-alone LPP or as an “interim recommendation and deferring remaining elements” because of the non-Federal sponsor’s concerns about being able to clean up HTRW necessary for construction of a larger floodwall plan.

Other than the NJDEP letter, the HSGRR/EA does not present a justification, including the relevant trade-offs, for the abrupt transition to a highly constrained and more localized LPP. The proposed LPP abandons the more comprehensive system-wide approach represented by the NED plan in favor of a plan that is narrowly defined and targeted to a relatively small portion of the overall study area. The LPP would only reduce flood damages in the study area by about 14 percent (p. 98), leaving exceptional residual flood damage risk, omitting flood risk reduction measures from a large portion of Newark and all of Kearney and Harrison. The HSGRR/EA does not provide any detailed explanation or analysis of the significant trade-offs, residual damages and life/safety risks, potential environmental justice issues, and/or potential community impacts associated with recommending the LPP compared to the NED plan or another alternative.

A more detailed analysis and comparison is needed of the extent to which the alternatives (particularly the NED plan and LPP) address the four accounts (National Economic Development [NED], Environmental Quality [EQ], Other Social Effects [OSE], and Regional Economic Development [RED]) as required by the Principles and Guidelines for Land and Water Resources Planning and the associated USACE planning guidance. In the HSGRR/EA, only one paragraph (p. 97) is devoted to the four accounts (for the LPP only). In addition, the report does not compare the extent to which each alternative meets the four criteria by which all water resource development plans are to be evaluated, as required by the Principles and Guidelines: completeness, effectiveness, efficiency, and acceptability. Given the initial scope of the HSGRR/EA, it is not clear in the report whether the LPP would be considered “complete,” given limited flood risk reduction across the study area, and “acceptable” to stakeholders and community members since so much of the study area was left out. Public comments on the HSGRR/EA from the Ironbound Community Corporation reinforce this concern.

The life and safety hazard assumptions for the study seem appropriate, given the comprehensive focus of the authorized plan and stated opportunities, goals and objectives, and planning constraints and considerations stated in Section 4 of the HSGRR/EA. Nonetheless, the planning process described in the HSGRR/EA ultimately rejects the more comprehensive approach with the abrupt emergence of the LPP,

based upon the November 2016 letter from NJDEP, without a meaningful discussion of the ramifications of that decision.

Significance – Medium

Without a comprehensive comparison of the plans that addresses the concerns identified above, it is not clear that the best overall plan has been selected.

Recommendation for Resolution

1. Include a comprehensive comparison of the NED plan and the LPP in the HSGRR/EA, including a detailed discussion of the significant trade-offs, residual damages and life/safety risks, potential environmental justice issues, and/or potential community impacts associated with both plans.
2. Clarify in the HSGRR/EA whether the TSP is proposed as a complete stand-alone LPP or as an “interim recommendation and deferring remaining elements” because of the concerns about HTRW clean-up that would be necessary for the larger floodwall plan (as indicated on slide 53 of the kick-off slide presentation of the IEPR).

PDT Final Evaluator Response (FPC #2)

X	Concur	Non-Concur
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This recommendation is a final response to the P.L. 113-2 authority and a partial response to Passaic Mainstem authority; the recommendation does not de-authorize the other portions of the study area in the Tidal Protection Area under the Passaic Mainstem authority. Additionally, the other areas are still part of the New York New Jersey Harbor and Tributaries study area and could also be investigated in the future.

Based on the U.S. Army Corps of Engineers, North Atlantic Division (CENAD)-approved Strategy Paper (4 September 2014), the focused array of alternatives for this reevaluation included the following three scenarios (elevations) based on the authorized levee and floodwall project: +14 feet NAVD88 (authorized height), +16 feet NAVD88 (authorized height +2 feet), and +18 feet NAVD88 (authorized height +4 feet). This was further presented in the PMP and accepted at the Alternative Milestone meeting. Since the team understood the plan had the potential for significant changes, the reevaluation was considered a GRR instead of an LRR; the anticipated changes were proved true. Due to the of the approved limited formulation strategy, the team focused on the authorized alignment.

At the direction of HQUSACE at TSP meeting #1, further coordination with the non-Federal sponsor occurred and a second iteration of plan formulation began and focused on the NJDEP’s request for the Newark Flanking Plan, thus the Newark Flanking Plan Alternative was developed. The Newark Flanking Plan is an alternative to the NED Plan, as there are incrementally justified segments and many combinations of those segments.

Recommendation 1:	X	Adopt	Not Adopt
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A comparison of the Newark Flanking Plan to the NED Plan is presented in the table below, along with the other alternatives for the City of Newark; alternatives that include Harrison and Kearny have been screened out for the second iteration and have not been included. A similar alternative comparison table will be included in the Plan Formulation chapter of the final report.

Alternative	First Cost	Annual Benefits	Annual Costs	Annual Net Benefits	BCR
Newark Flanking Plan Alternative [14 feet NAVD88]	\$62,866,000	\$11,044,000	\$2,849,000	\$8,194,000	3.9
National Economic Development Plan [16 feet NAVD88]		\$67,440,000	\$31,625,000	\$35,815,000	2.1
Newark Alternative [16 feet NAVD88]		\$20,601,000	\$11,042,000	\$9,559,000	1.9
Newark Flanking Segments and Newark [14 feet NAVD88]		\$26,382,000	\$11,092,000	\$15,290,000	2.4

Additionally, a comprehensive comparison of the NED plan and the LPP will be included in the final HSGRR/EA. The information that will be included, but not limited to::

- Significant trade-offs
 - NED Plan reduces flooding risk in a larger area but eliminates access to waterfront
- Residual damages
 - The NED Plan would have \$6.4 million in residual risk while the TSP would have \$64.8 million. However, the LPP is still a substantial project, reducing risk to 15,000 people and 2,300 structures, with average annual benefits of \$11 million.
 - The Newark Flanking Plan Alternative was also analyzed at the NED elevation of 16 feet and could decrease the residual risk by \$1,700 annually. However, increasing the floodwalls to elevation 16 feet would require tie-off locations further away and include more segments; adding several hundred feet of additional floodwall at an additional cost of \$200,000 annually.
- Life/safety risks
 - The NED is estimated to decrease flooding risk to 40,000 people and 6,000 structure while the TSP is estimated to decrease flooding risk to 15,000 people and 2,300 structures.
- Potential community impacts
 - The TSP will contribute to community resilience by reducing the risk of damages in the risk management area, and increasing the speed and decreasing the cost of recovery after flood events.
 - The NED would reduce flood risk but will also significantly limit the community's access to the waterfront; this is a major issue/concern of the community.

Recommendation 2: **X** **Adopt** **Not Adopt**

The report will also clarify that the TSP is proposed as a complete stand-alone LPP. It will also state that the project is and is a final response to the P.L. 113-2 authority and a partial response to Passaic Mainstem authority; the recommendation does not de-authorize the other portions of the study area in the Tidal Protection Area under the Passaic Mainstem authority.

Panel Final BackCheck Response (FPC # 2)

Passaic Tidal IEPR – Comment Response Record

X	Concur	Non-Concur
<p>In addition to the supplemental information and clarifications to the HSGRR/EA proposed by the PDT, it would be helpful to ensure that the November 18, 2016 letter from the NJDEP (the non-Federal sponsor) is included in the report for reference along with any other decision-related documentation that guided the evolution of the project from the original NED Plan to the LPP.</p>		

Final Panel Comment 3

Considering the importance of Segment 7 to the function of the modified Newark Flanking Plan, it is unclear why it is not included as a feature of the LPP for the proposed Federal CSRM project.

Basis for Comment

The HSGRR/EA states (p. 87):

However, further hydrologic analysis showed that the Newark Flanking segments cannot stand alone once the authorized project floodwalls are eliminated from the plan. Three additional areas with low elevations allow for flooding near I-95. Additionally, the updated analysis shows the Minish Park segment (Segment 7) and the Newark Flanking segment connecting, due to low topography between the two segments ... Therefore, in order for the Newark Flanking segment to function, the I-95 area and the Minish Park segment would need to be included as the “Newark Flanking Plan.

These statements indicate that the Minish Park segment (Segment 7) is essential to the successful functioning of the LPP and necessary to achieve the stated flood risk reduction benefits of the proposed Federal project.

The HSGRR/EA further states (p. 89):

As part of the Newark Passaic Riverfront Revitalization project, the City of Newark and the Trust for Public Land are redesigning and completing construction at the park. Part of the plan for the park included placing fill in the area. After reviewing the City’s plans, the New York District made suggestions to increase the ground elevation to the height of the floodwall proposed in the area. The City incorporated the suggestions into their designs. By increasing the elevation of the park and meeting the proposed elevation grade, the low-lying areas were removed and the need for Segment 7 was eliminated.

It is not clear from the paragraph above whether the necessary improvements for flood risk reduction in Minish Park (Segment 7), as specified in the HSGRR/EA, have already been constructed by the City of Newark and/or Trust for Public Lands.

Regardless of whether the feature has been designed and/or constructed already, it is also not clear why Segment 7 is not specifically included in the recommended Federal flood risk management project. If Segment 7 is essential to the successful functioning of the recommended LPP, it should be included in the project cost and cost-shared with the non-Federal sponsor, designed and built to USACE standards (even if the non-Federal sponsor constructs it with USACE oversight), and integrated into the project’s operation and maintenance requirements. Unless included as an integral part of the recommended Federal project, neither USACE nor the non-Federal sponsor (NJDEP) may be able to ensure that the Minish Park segment is designed, constructed, operated, and maintained over the project life to USACE standards for flood risk management purposes.

Significance – Medium

Without Segment 7 in the recommended Federal project, the HSGRR/EA does not provide clear assurance that all necessary features to provide the stated level of flood risk management will be designed, built, and maintained to USACE standards.

Recommendation for Resolution

1. Clarify whether the City of Newark and Trust for Public Lands have already completed construction of the earthen structure in Minish Park that is intended to negate the need for a levee or floodwall structure. If so, confirm in the HSGRR/EA that the design of the feature was reviewed by USACE and constructed to USACE standards for a flood risk reduction measure.
2. If not already constructed by local interests, modify the HSGRR/EA to incorporate Segment 7 as an integral feature of the proposed Federal CSRM project

PDT Final Evaluator Response (FPC #3)

Concur Non-Concur

Construction within the park is already completed. Surveys were conducted and the ground elevation now meets our design height, eliminating the need for Segment 7. The City of Newark’s construction in the park is now part of our existing condition. The 14-foot ground elevation at the would-be segment 7 location, and the 14-foot contour in the entire study area, is essential to the successful functioning of the recommended LPP.

To ensure that the 14-foot contour the LPP relies on is operated and maintained over the project life, recommendations will be made to include the 14-foot contour in the City of Newark’s Floodplain Management Plan.

Recommendation 1: Adopt Not Adopt

Construction within the park is already completed. The City of Newark and Newark Parks Department designed and constructed the park in coordination with USACE to ensure that it could be incorporated into the recommended plan. Surveys were conducted and the ground elevation now meets our design height; the report will be revised to state this and will include the completion date.

Recommendation 2: Adopt Not Adopt

The City of Newark already completed construction in the park; therefore, Recommendation 2 does not need to be adopted.

Panel Final BackCheck Response (FPC # 3)

Concur Non-Concur

The PDT response clarifies the status of the Minish Park segment (Segment 7), The inclusion of additional information in the HSGRR as indicated in the response to Recommendation #1 should eliminate potential confusion about the status of Segment 7.

Final Panel Comment 4

It is unclear how or whether the economic analysis accounted for structures substantially damaged by Hurricane Sandy and planned resilience projects.

Basis for Comment

The assessment of damages to structures described in Appendix G and the HSGRR/EA was based on detailed surveys of 520 structures out of a total of 6,774 structures in the study area. The detailed survey results were extrapolated to the structures that were not surveyed.

Since 2007, the NJDEP has required that structures substantially damaged as a result of a flood be rebuilt with a first floor elevation one foot above the Base Flood Elevation. There is no mention of how or whether there was consideration given to structures that were substantially damaged during Hurricane Sandy and rebuilt above the Based Flood Elevation. Such structures should not be included in the benefits calculation for this project, even if they have not been rebuilt.

It is also unclear whether the “resilience projects” (HSGRR/EA, p. 79) that are planned in the industrial areas were accounted for in the economic analysis. The HSGRR/EA does not clearly describe the “resilience projects,” where they are planned, or how they would impact flood risk.

Significance – Medium

Proper accounting of structures that have been substantially damaged by prior floods and resilience projects is critical to calculating flood risk management benefits.

Recommendation for Resolution

1. Describe how many structures were substantially damaged during Hurricane Sandy, or other flood events since 2007, and how these structures were accounted for in the calculation of flood damages.
2. Describe any planned or existing resilience projects and how they were addressed in the calculation of flood damages.

PDT Final Evaluator Response (FPC #4)

X	Concur	Non-Concur
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We concur that the damage and benefit models should reflect the status of elevated structures. We do not agree that these structures should be completely removed from the analysis. The inventory survey was conducted to reflect the overall condition (including typical heights above grade) of the development in the floodplain as of January 2015, slightly more than two years after Hurricane Sandy. While the sample survey did not identify all of the specific structures that have been elevated, this data reflects the average impact of elevating structures due to substantial damage. On average the first floor of apartment buildings was identified as 4 feet above grade and the average first floor of residential buildings was identified as 3 feet above grade. It should be noted that data on individual flood claims and substantially damaged structure assessments is considered confidential and can't be included in the report or otherwise distributed.

Damages and benefits were not computed for structures covered by existing and planned resiliency projects in the project area. The other resiliency projects in the area focus on critical infrastructure cover the following facilities in the project area:

- Passaic Valley Sewerage Commission treatment plant
- PATH train maintenance facility
- Various PSE&G electrical generation/distribution facilities.

Recommendation 1: **Adopt** **Not Adopt**

Text will be added to the report to describe that the sample inventory reflects the impact of structure elevation on damages. General information regarding flood depths during Sandy and the rebuilding requirements associated with substantial damage will be added to the description of Hurricane Sandy.

Recommendation 2: **Adopt** **Not Adopt**

Text will be added to the report to acknowledge the existing and planned resiliency projects listed above and to clarify that they were excluded from all benefit analyses.

Panel Final BackCheck Response (FPC # 4)

Concur **Non-Concur**

Final Panel Comment 5

The decision to replace the levees in the plan with floodwalls to decrease the potential scope of HTRW remediation is not adequately supported in the report.

Basis for Comment

The refinements to the authorized plan (HSGRR/EA, p. 81) were made to develop new alternatives analyzed in the HSGRR/EA. One of the changes was to remove levees from further consideration and change the authorized plan to all floodwalls to reduce potential exposure to HTRW and require less real estate. Table 28 (HSGRR/EA, p. 80) indicates that slightly over 2 miles of the authorized plan would be levees. However, Section 4.6 (pp. 77 and 78) states that the levee and floodwall plan in the Passaic Tidal Area involves 5.5 miles of levee and 5 miles of floodwall. This significant difference in the HSGRR/EA's characterization of the extent of levees versus floodwalls in the authorized plan is not explained.

Regardless of whether the authorized plan would involve 2 or 5.5 miles of levee, the report does not discuss the trade-offs involved in the decision to change to an all floodwall plan. According to the HSGRR/EA (p. 78), floodwall costs per mile, using the cost estimate of the North Atlantic Coast Comprehensive Study (NACCS), would be 3.4 times more than levee costs per mile (\$28.2 million/mile versus \$8.3 million/mile). This change from levee to all floodwall potentially leads to an excessively high cost estimate for the authorized plan and to a potentially significant understatement of net benefits of the NED plan (a variation of the authorized plan), making it appear less cost-effective than it might otherwise be.

A principal reason given for the change to replace all levees in the authorized plan with floodwalls is to minimize encounters with HTRW and to decrease the amount of remediation needed. Since little is known about the actual extent of HTRW contamination along the levee/floodwall corridor for the authorized plan, the decision to use significantly more expensive floodwalls (compared to levees) to avoid HTRW encounters may not fully consider the range of risks, costs, and trade-offs associated with that decision. Floodwall construction may not significantly reduce HTRW exposure. Levees could serve to cap HTRW-contaminated surface soils, potentially addressing two issues concurrently: flood risk reduction and remediation of contaminated soils. Further, levees may not substantially increase real estate costs compared to floodwalls. Levees in some locations might provide other benefits in certain communities as they may be more aesthetically pleasing than a floodwall as well as provide greenspace, walking/trail corridors, and easier access from one side to the other. These trade-offs and other considerations are not addressed in the report and potentially could affect the appropriate scope of the NED plan and net benefits of the NED plan.

Significance – Medium/Low

The discussion in support of the decision to change the authorized plan (from which the NED plan is derived) omits key technical information and trade-off analysis vital to determining if the NED plan is accurately defined and enabling a fair comparison of the NED plan to the TSP/LPP.

Recommendation for Resolution

1. Clarify the inconsistencies in the HSGRR/EA regarding the extent of levees versus floodwalls in the authorized plan (from which the NED plan was derived)

2. Incorporate a more complete discussion of the rationale for changing the levee/floodwall combination in the authorized plan to an all floodwall configuration, including the trade-offs, risks and uncertainties, and significantly greater cost per mile associated with the change.

PDT Final Evaluator Response (FPC #5)

X	Concur	Non-Concur
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The decision to assume all floodwalls, instead of a floodwall-levee combination plan, was a decision that was made early in conjunction with the vertical team because of the following reasons:

- 1) Land constraints. Little land is available due to the densely developed area. The levee footprint, at times exceeding 100 feet wide with required easements, would require a substantial real estate that is already developed with valuable industrial structures and property.
- 2) Minimize potential impacts on HTRW sites, in both size and scope. Due to the current and historical nature of the project area as industrial use, the NED project alignment crosses upwards of 70 known contaminated sites (KCS). The alignment had been further adjusted from the authorized plan to avoid an encapsulated Superfund site.
- 3) Preliminary analysis of founding soils. Current geotechnical information indicates that much of the line of protection alignment would be constructed on mixed and variable fill. Initial analyses presented in the Geotechnical Report indicate that this material is not homogeneous and is likely unsatisfactory for a levee footing without augmentation. Therefore, construction of the levees would require extensive excavation and replacement of up to six feet or more of the existing material the width of the levee prior to levee construction.

The potential HTRW conflicts, real estate takings, and structural challenges make levee construction infeasible in the initially proposed locations. A pile-supported T-wall does not avoid the HTRW concerns, but requires significantly less real estate takings and is not dependent on the quality of founding material or fill.

Current policy requires the non-Federal sponsor to provide the construction site(s) free of contaminants. Therefore, the concept of using levees to cap the contaminated areas was not feasible as construction without excavation was virtually impossible. The District investigated a minimal excavation T-wall – constructed with the foundation at grade – however; it is unlikely to be completed without any excavation even if exceptions could be made to the aforementioned clean site policy. Due to the industrial nature of the project area, recreation benefits from levee construction were not anticipated and were not considered.

Additionally, the Tentatively Selected Plan is not one long continuous segment, instead, it is seven smaller segments with multiple road crossings and one railroad crossing.

The inconsistencies in the length of floodwall and levee segments was identified: The 1987 GDM (authorized) states that the levee and floodwall plan in the Passaic Tidal Area involves 5.5 miles of levee and 5 miles of floodwall while the 1995 GDM states that the levee and floodwall plan consists of 2.1 miles of levees and 10.8 miles of floodwall.

Recommendation 1:	X	Adopt	Not Adopt
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The identified inconsistencies in the report are being corrected for the final report. The report will detail the authorized 1987 GDM's alignment.

Recommendation 2:	<input type="checkbox"/>	Adopt	<input checked="" type="checkbox"/>	Not Adopt
<p>The rationale for changing the levees in the authorized plan to floodwalls will be added in the decision log and risk register for internal Corps review. The decision log and risk register will detail the potential risks, such as underestimating benefits due to the increased cost of floodwalls as compared to levees.</p>				
Panel Final BackCheck Response (FPC # 5)				
<input checked="" type="checkbox"/>	Concur	<input type="checkbox"/>	Non-Concur	
<p>In addition to correcting the identified inconsistencies in the HSGRR/EA, it would be helpful to the reader to also include some of the additional information on the trade-offs between levees and floodwalls in this urban setting in the report.</p>				

Final Panel Comment 6

The potential impacts of the TSP/LPP on socio-economic/environmental justice issues have not been sufficiently addressed in the report.

Basis for Comment

The HSGRR/EA Section 6.6.1 states (p. 106) that “no disproportionately high and adverse impacts to minority and low-income populations would be expected ...” from the TSP, or the LPP. The LPP would only reduce flood damages in the overall study area by about 14 percent (p. 98), leaving exceptional residual flood damage risks compared to the NEP plan by omitting flood risk reduction measures from a large portion of Newark and all Kearney and Harrison. The LPP clearly does not provide flood risk reduction measures for a significant portion of the study area, but the HSGRR/EA does not sufficiently address the potential effects, real or perceived, of the LPP favoring a portion of the study area over others or potentially having disproportionate adverse impacts on communities that were excluded from risk reduction by the LPP.

The Environmental Justice Summary in the HSGRR/EA (Section 6.6.1, p.106) states that the No Action Alternative “would potentially have a **major indirect adverse impact on the community** (emphasis added) within Project Area ...” The report does not provide any analysis of the demographics and socio-economic characteristics related to residential, commercial, industrial, and health/safety services (police, fire, medical), land uses, and activities in the significant portions of the study area left without any flood risk reduction measures under the LPP. Nor does the HSGRR/EA describe the residual and unaddressed adverse impacts on the low income and minority communities in these areas that would remain without flood risk reduction measures.

One of the public comments voiced environmental justice concern at the omission of portions of the study area from the LPP. In a letter dated November 15, 2017, the Ironbound Community Corporation (ICC), representing the ethnically diverse Newark neighborhood of Ironbound (a portion of which would be excluded from the LPP), stated:

While the study does show that the flooding from storm surge will be mitigated in portions of the community, the entire northeastern end of Ironbound will remain susceptible to flooding. The study claims that this area is industrial; in doing so, the study ignores or actually fails to understand that hundreds of households have also occupied the area for decades, and in some cases, more than a century. This part of Ironbound is commonly referred to as “The Island,” a mix of public housing, working class homes, businesses and industry that provide jobs for local people, and parks. The public housing in this area includes hundreds of African-American and Latino families. More must be done to mitigate flooding for this particularly vulnerable part of Ironbound. Ignoring or disregarding this largely low-income and people of color community may constitute an environmental injustice.

This public comment reinforces the Panel’s concern that a more comprehensive analysis is warranted.

Significance – Medium/Low

The HSGRR/EA lacks a detailed description of the environmental justice implications associated with the TSP/LPP, particularly as compared to the more comprehensive NED plan.

Recommendation for Resolution

1. The report should more carefully describe and compare the demographics, socio-economics, and land use considerations in the areas covered, and not covered, by the flood risk reduction measures in the LPP to ensure that real or perceived environmental justice concerns are adequately addressed in the documentation.
2. The referenced public comment asserts that the report mischaracterizes, or over-generalizes, land use (residential versus industrial) in an area not protected by the LPP. The HSGRR/EA should provide a more detailed description of such communities within the overall study area.

PDT Final Evaluator Response (FPC #6)

X Concur **Non-Concur**

Concur that additional details describing the study area in terms of socioeconomic, demographics and environmental justice issues is warranted, along with further discussion of the project/alternative impacts and protections (or lack of) to these populations. This will be accomplished through the updates to the HSGRR/EA listed below.

Recommendation 1: **X Adopt** **Not Adopt**

The following edits/updates will be incorporated into the HSGRR/EA to address the recommendation:

1. Update the Existing Conditions and Impact sections on Land Use, noting the presence of residential development in Harrison, south of I-280, and in Newark in the East Ferry Section, including the “island” portion of the Ironbound Section of Newark. Addition of a figure of the study area by income and minority status (low income vs non-low income and disproportionately minority >50% by census tract groups) to better illustrate the locations and corresponding impacts and potential flood reductions in these communities.
2. In the Alternatives, and cross reference in the Environmental Justice section, explain why flood mitigation measures are not feasible in East Ferry and Harrison and potentially parts of Kearny etc.
3. If data/information is available, determine whether the 17 private properties that require temporary and permanent easements are owned by EJ populations or not and describe impacts accordingly.
4. Specifically note in the Socioeconomic/EJ section that the implementation of flood control measures in Newark will not result in increased flooding potential in adjacent unprotected areas as the project will not induce flooding. And additionally confirm and state that the project would not result in a deteriorated condition from Combined Sewers in the areas not benefited from the flood protection.
5. Include in the EJ section, a discussion of the public outreach efforts with low income/minority (EJ) populations that have been conducted to show they were not excluded. The Executive Summary – references the following EJ outreach: "Coordination with local, state, federal stakeholders through the Ironbound Community, CAG, and Urban Rivers Meetings. Community in EJ communities engagement aided in Plan development." This will also be summarized in the EJ section. following the additional analysis of the EJ communities, this section will also state whether these communities are within the LPP and would be afforded protection from flooding or not or if they would be adversely impacted by residual flooding (tidal or interior drainage) as a result of the project.

6. Add to the Environmental Consequences section for EJ, a table of other impact areas of the EA to EJ tracts verse non-EJ tracts. Ideally showing that while impacts remain to EJ communities, there is no disproportional impact.

Recommendation 2: **Adopt** **Not Adopt**

Concur that additional details describing the study area in terms of socioeconomics, demographics, and environmental justice issues is warranted. This will be accomplished through the updates to the HSGRR/EA listed below.

The following edits/updates will be incorporated into the HSGRR/EA to address the recommendation:

Update the Existing Conditions and Impact sections on Land Use, noting the presence of residential development in Harrison, south of I-280, and in Newark in the East Ferry Section, including the “island” portion of the Ironbound Section of Newark. Addition of a figure of the study area by income and minority status (low income vs non-low income and disproportionately minority >50% by census tract groups) to better illustrate the locations and corresponding impacts and potential flood reductions in these communities.

Panel Final BackCheck Response (FPC # 6)

Concur **Non-Concur**

Final Panel Comment 7

Flooding and frequency relationships have not been confirmed for the TSP/LPP or outlined in the feasibility report.

Basis for Comment

The HSGRR/EA shows the Hurricane Sandy surge boundary (Figure 16), the Newark area without the TSP/LPP (Figure 19), and Newark with the TSP/LPP (Figure 20). It is clear the NACCS model, which focuses on coastal surge conditions, was used. However, it is unclear how the flooding and frequency relationships were developed for the focused array of alternatives, specifically the +14 feet, +16 feet, and +18 feet NAVD scenarios.

The HSGRR/EA shows flood frequency elevations in Tables 4 and 5, but it appears these are graphics produced by the Federal Emergency Management Agency (FEMA) prior to Hurricane Sandy. Figure 15 in the Hydrology and Hydraulics Report (Appendix F) shows a lack of correlation between rainfall and surge, though it is clearly a storm surge problem. The main concern is how the TSP/LPP affects the other areas in the study from a flooding perspective. The HSGRR/EA should present details on the volume and elevation of floodwaters that are flanked (or blocked) by the TSP/LPP that will result in the flooding of other parts of the basin.

It is also unclear whether the velocities in the Passaic River have the potential to increase, causing more scour in the channel, around bridges, and in contaminated areas. The HSGRR/EA does not present an analysis to determine if the impacts are minimal or negligible. These details are important because the risks, impacts, and uncertainties should be documented in the HSGRR/EA.

Significance – Medium/Low

The relationship between flooding and frequency within the TSP/LPP and how it may affect flooding in adjacent areas (Kearny, Harrison, and Minish) is not clear therefore project risks and impacts is unknown.

Recommendation for Resolution

1. Include an analysis of flooding and frequency within the TSP/LPP, but also for adjacent planning reaches in the study areas.
2. Include with and without TSP/LPP conditions for Kearny, Harrison, and Minish for water surface elevations and velocities.
3. Address the scour potential of contaminated areas from the TSP/LPP.

PDT Final Evaluator Response (FPC #7)

Concur	X	Non-Concur
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An analysis of the LPP’s potential impacts on other coastal areas (i.e., Harrison, Kearny, Newark outside the risk management area) was not conducted. However, due to the recessed location of the proposed line of protection from the Newark Bay shoreline and the relatively small volume of tidal surge which would be kept out of the Ironbound area compared with the volume in the flooded areas, it was assumed that this impact will be negligent to minimal.

Likewise, as the primary flood risk originates from the tidal surge, a detailed hydraulic analysis of the Passaic River was not conducted. The relative steepness of the banks of the river indicates that a significant increase in fluvial flood flow, and potential scour, is possible under existing conditions before flood risk to the adjacent communities is realized. Therefore, it can reasonably be assumed that any potential measurable impacts from increased flows and scour in the Passaic River are not influenced by the NED or TSP/LPP plans.

The Feasibility Report will not be revised since the effort to model the entire study area and adjacent reaches is significant, and it was assumed that this impact will be negligent to minimal. The District will evaluate whether additional study of induced coastal flooding or increased river scour is warranted during the PED phase of the project.

Recommendation 1: **Adopt** **Not Adopt**

Explanation: An analysis of the LPP’s potential impacts on other coastal areas (i.e., Harrison, Kearny, Newark outside the risk management area) was not conducted. However, due to the recessed location of the proposed line of protection from the Newark Bay shoreline and the relatively small volume of tidal surge which would be kept out of the Ironbound area compared with the volume in the flooded areas, it was assumed that this impact will be negligent to minimal.

The Feasibility Report will not be revised since the effort to model the entire study area and adjacent reaches is significant, and it was assumed that this impact will be negligent to minimal. The District will evaluate whether additional study of induced coastal flooding or increased river scour is warranted during the PED phase of the project.

Recommendation 2: **Adopt** **Not Adopt**

Explanation: An analysis of the LPP’s potential impacts on other coastal areas (i.e., Harrison, Kearny, Newark outside the risk management area) was not conducted. However, due to the recessed location of the proposed line of protection from the Newark Bay shoreline and the relatively small volume of tidal surge which would be kept out of the Ironbound area compared with the volume in the flooded areas, it was assumed that this impact will be negligent to minimal.

Likewise, as the primary flood risk originates from the tidal surge, a detailed hydraulic analysis of the Passaic River was not conducted. The relative steepness of the banks of the river indicates that a significant increase in fluvial flood flow, and potential scour, is possible under existing conditions before flood risk to the adjacent communities is realized. Therefore, it can reasonably be assumed that any potential measurable impacts from increased flows and scour in the Passaic River are not influenced by the NED or TSP/LPP plans.

The Feasibility Report will not be revised since the effort to model the entire study area and adjacent reaches is significant, and it was assumed that this impact will be negligent to minimal. The District will evaluate whether additional study of induced coastal flooding or increased river scour is warranted during the PED phase of the project.

Recommendation 3: **Adopt** **Not Adopt**

Explanation: As the primary flood risk originates from the tidal surge, a detailed hydraulic analysis of the Passaic River was not conducted. The relative steepness of the banks of the river indicates that a significant increase in fluvial flood flow, and potential scour, is possible under existing conditions before flood risk to the adjacent communities is realized. Therefore, it can reasonably be assumed that any

potential measurable impacts from increased flows and scour in the Passaic River are not influenced by the NED or TSP/LPP plans.

The Feasibility Report will not be revised since the effort to model the entire study area and adjacent reaches is significant, and it was assumed that this impact will be negligent to minimal. The District will evaluate whether additional study of induced coastal flooding or increased river scour is warranted during the PED phase of the project.

Panel Final BackCheck Response (FPC # 7)

<input checked="" type="checkbox"/>	Concur	<input type="checkbox"/>	Non-Concur
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The PDT has acknowledged future evaluation if additional study is warranted (during late PED phase) for the flanked flooding and scour induced impacts therefore, the Panel accepts the PDT's response and understands why the issue is being addressed the way it is.

Final Panel Comment 8

The TSP/LLP alternative has not been evaluated from an engineering perspective in the HSGRR/EA or its appendices.

Basis for Comment

The TSP/LLP alternative has not been evaluated in the engineering appendices, therefore the Panel is uncertain about the implications of this omission on the implementation of the selected alternative. The following provides details on the analyses that the Panel believes are lacking in the various appendices.

1. Geotechnical Report: The geotechnical report does not address the TSP/LLP. Specifically, subsurface explorations do not appear to have been performed at structure locations: Segments 1 through 6. Therefore, it is not clear whether the performed analyses (including foundation recommendations) reflect the subsurface conditions present at those locations.
2. Draft Engineering and Design: Hydrology and Hydraulics (Section 6) and Geotechnical Analysis (Section 7) do not appear to apply to the TSP/LLP. Wave analyses do not appear to have been performed reflective of the TSP/LLP. Section 7.0 acknowledges that the geotechnical report does not represent the TSP/LLP sites, but notes that the available data, conclusions, and recommendations have been “conservatively” assumed for the TSP/LLP. No basis is provided for supporting this assumption. However, the report indicates that additional investigations will be performed before the final report is completed.
3. Floodwall Design Criteria (represented as 30% design): The Floodwall Design Criteria, specifically the foundation elements, do not address the TSP/LLP. Water levels appear to bracket the condition of TSP/LLP, except Elevation 12 top of wall segments.
4. Draft Closure Gates (represented as 30% design): The gate inventory and type appear not to represent the TSP/LLP segments as presented on Drawings C-101 through C-107 and described in the Engineering Report.
- 5: Drawings: Sheets C-101 through C-107 reflect the plan details for the TSP/LLP. The sheets that follow, showing wall details, gate details, pumps, station and drainage structures, do not appear to be applicable to the TSP/LLP. No details are provided for TSP/LLP tide gates.

Significance – Medium/Low

The engineering documentation does not evaluate the TSP/LLP alternative; therefore, the basis for cost and constructability is not presented, affecting the technical quality of the documentation.

Recommendation for Resolution

1. Acknowledge in each of the supporting project documentation identified above that the TSP/LLP is not addressed (similar to the statement addressing geotechnical report).
2. Confirm that the lack of available analyses for TSP/LLP is not anticipated to affect conclusions.

PDT Final Evaluator Response (FPC #8)		
X	Concur	Non-Concur
<p>Much of the technical aspects of the engineering are similar to the NED plan. However, these disciplines will be updated prior to the final report.</p> <p>1. Geotechnical Report: The geotechnical report will be revised to reflect the geological and soil conditions of the locations of the additional LPP segments.</p> <p>2. Draft Engineering and Design: Hydrology and Hydraulics aspects of the project are relatively unchanged from the NED plan; however, the Appendix (and associated sections elsewhere) will be revised.</p> <p>3. Floodwall Design Criteria (represented as 30% design): The Floodwall Design Criteria, specifically the foundation elements, do not specifically address the TSP/LLP; however, the information and assumptions are similar to the NED. The criteria will be revised to reflect the LPP locations.</p> <p>4. Draft Closure Gates (represented as 30% design): The feasibility-level gate design is based on length and height quantities. The information will be tailored to the LPP plan for the final report.</p> <p>5: Drawings: Sheets C-101 through C-107 reflect the plan details for the TSP/LLP. The detail sheets will be revised to reflect the LPP.</p>		
<p>Recommendation 1: <input checked="" type="checkbox"/> Adopt <input type="checkbox"/> Not Adopt</p>		
<p>As described above, the supporting project documentation will be revised to reflect the LPP locations and conditions. The lack of additional data and modelling for the TSP/LLP has already been acknowledged in the Decision Log and Risk Register.</p>		
<p>Recommendation 2: <input checked="" type="checkbox"/> Adopt <input type="checkbox"/> Not Adopt</p>		
<p>As described above, the supporting project documentation will be revised to reflect the LPP locations and conditions. The lack of additional data and modelling for the TSP/LLP has already been acknowledged in the Decision Log and Risk Register.</p> <p>Although wave analyses were not performed, due to the shoreline and floodwall orientations and the short wave fetches, waves are not anticipated to change the conclusions.</p>		
Panel Final BackCheck Response (FPC # 8)		
X	Concur	Non-Concur

Final Panel Comment 9

The assumption that the Harrison 2 Section is hydrologically independent is not supported in the main report.

Basis for Comment

The HSGRR/EA does not discuss what analyses (or models) were performed or how it was concluded that the Harrison 2 Section was hydrologically independent from other components of the TSP/LPP. As a result, it is not clear whether the Harrison 2 Section should be included in the TSP/LPP.

The assumption that the Harrison 2 Section is hydrologically independent is important because it potentially affects both the benefits, costs, and performance of the TSP/LPP. Since the equivalent annual benefits are less than the costs for the Harrison 2 Section, the TSP/LPP benefit-cost ratio would be reduced if the Harrison 2 Section was included in the TSP/LPP.

Significance – Low

The performance of the TSP/LPP and its benefit-cost ratio may change if Harrison 2 is not hydrologically independent.

Recommendation for Resolution

1. Explain why the Harrison 2 Section is hydrologically independent from the remaining TSP/LPP components.

PDT Final Evaluator Response (FPC #9)

<input checked="" type="checkbox"/>	Concur	<input type="checkbox"/>	Non-Concur
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The two Harrison areas (1 and 2), as well as Kearny Point are across the Passaic River and Newark Bay from the TSP/LPP components in Newark, making them hydraulically independent of the TSP/LPP areas. Without sufficient high ground or controlling elevations to tie-off the floodwall components or limit the length of the floodwall elements of a lower-elevation plan (i.e., 14 feet NAVD) similar to Newark, a smaller, LPP is not possible in those areas.

Harrison 2, in particular, was removed from the NED plan as no longer warranting risk management features due to: 1) the demolition and removal of the previously floodprone industrial structures identified in previous studies, 2) the construction of the Red Bulls Arena above the design storm elevation, 3) and the expected construction of site-specific resiliency measures at the PATH Train maintenance depot. These factors essentially eliminated almost all of the potential flood risk management benefits for that reach. Planned redevelopment of the area is expected to be in accordance with FEMA guidelines with elevated first floors.

Recommendation 1:	<input checked="" type="checkbox"/>	Adopt	<input type="checkbox"/>	Not Adopt
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Explanation: The following text will be added to the Main Report:

The two Harrison areas (1 and 2), as well as Kearny Point are across the Passaic River and Newark Bay from the TSP/LPP components in Newark, making them hydraulically independent of the TSP/LPP areas. Without sufficient high ground or controlling elevations to tie-off the floodwall components or limit the length of the floodwall elements of a lower-elevation plan (i.e., 14 feet NAVD) similar to Newark, a smaller, LPP is not possible in those areas.

Harrison 2, in particular, was removed from the NED plan as no longer warranting risk management features due to: 1) the demolition and removal of the previously floodprone industrial structures identified in previous studies, 2) the construction of the Red Bulls Arena above the design storm elevation, 3) and the expected construction of site-specific resiliency measures at the PATH Train maintenance depot. These factors essentially eliminated almost all of the potential flood risk management benefits for that reach. Planned redevelopment of the area is expected to be in accordance with FEMA guidelines with elevated first floors.

Panel Final BackCheck Response (FPC # 9)

X	Concur		Non-Concur
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Final Panel Comment 10

It is unclear which models were used to produce the results presented in the report.

Basis for Comment

The HSGRR/EA does not clearly outline which models were used in the project analysis. Based on comments and answers from the Project Delivery Team (PDT) during the mid-review teleconference, the only modeling identified was the NACCS modeling system, which simulated the larger region affected by Hurricane Sandy. As to the use of other models, the HSGRR/EA is unclear. The Panel has three main concerns regarding the modeling presented in the HSGRR/EA.

1. USACE states the Hydrologic Engineering Center-River Analysis System (HEC-RAS) model can be used for flooding impacts and scour velocity evaluations. In the Hydrology and Hydraulics Report (Appendix F), the HEC-Hydrologic Modeling System (HEC-HMS) model was applied for interior drainage and produced Tables 22-43. It is unclear if there was a linkage from the NACCS to the HEC-HMS and HEC-RAS models that could be useful for the river flow routing. USACE has stated further modeling would be developed during the PED phase to refine the TSP/LPP. Therefore, it is confusing to understand which model produced the flood predictions for the TSP/LPP.
2. It is important to document the models and their usefulness to the reader, yet, for example, there are no calibration or validation plots in the HSGRR/EA nor the Hydrology and Hydraulics appendix. The HSGRR/EA (p. 101) describes flooding with and without the project (TSP/LPP). This is important to present if the results were directly from the NACCS model. If so, USACE should describe where the calibration of the model has been documented and if it is a USACE-approved planning model.
3. In the HSGRR/EA and the Hydrology and Hydraulics Report (Appendix F), there are various figures showing flood elevations (some of which are simulated with NACCS). It is unclear if the following (HSGRR/EA, pg 101) was simulated.

“During storms that exceed the design criteria of the pump stations, some ponding of stormwater in the interior portions of Newark would occur, resulting in localized residual flooding. This is expected to be an infrequent occurrence; however, any residual flooding is expected to be far less than any associated storm surge when compared to the No Action Alternative. In cases of excessive rainfall without an accompanying storm surge, the residual flooding may result in minor to moderate impact to the communities within the drainage areas.”

Significance – Low

It is not clear what model produced the flooding analysis for the TSP/LPP or what additional modeling will be done in the future therefore, the impact the implementation of the TSP/LPP.

Recommendation for Resolution

1. Explain the future phases of modeling during PED that inform the public of additional studies of the TSP/LPP during design. This would also help develop the future scopes and budgets required to support the design and could be added to Section 4.7 under “Key Uncertainties.”

2. Include a full calibration and validation for the flood stages from the NACCS model in the HSGRR/EA; the current NACCS references are from 2015.

PDT Final Evaluator Response (FPC #10)

X Concur **Non-Concur**

The NACCS coastal model was used to calculate the with- and without project damages for the NED plan for the coastal reaches: Harrison, Newark East (along Newark Bay), and Kearny. The areas are subject to extreme coastal surges which exceed the riverine flood elevations at all frequencies; therefore, no riverine analysis of the Passaic River elevations was warranted for the analysis.

For the interior drainage analysis of the NED plan, the exterior stage-frequency hydrographs used in the HEC-HMS model closely matched the NACCS elevations. This was acceptable as the interior drainage model is not sensitive to slight variations in individual stage-frequency elevations (e.g., a particular event of 10 feet NAVD vs 10.6 feet NAVD).

The Ironbound area – the interior area of Newark – is subject to flooding primarily from a propagation of the coastal surge inland across Newark International Airport and up the Peripheral Ditch. The NACCS model results did not include propagation this far inland; however, the recent FEMA Preliminary Flood Insurance Rate Map (FIRM) for Essex County did include inland surge propagation. The FEMA stage-frequency data was close to the NACCS data in Newark Bay but not a match; however, because the FEMA data included inland propagation it was considered more accurate and was close enough to the NACCS data that it was considered the best available data for the area for the Feasibility-level analysis.

The interior drainage analysis of the TSP/LPP is being completed and its technical parameters will be spelled out in the updated report and appendices.

Recommendation 1: **X Adopt** **Not Adopt**

Explanation:

The Interior Drainage analysis will be refined to evaluate how the proposed drainage features will interact with the existing regulators and storm overflows. The Passaic Valley Sewerage Commission (PVSC) has developed an INFOWORKS Model to assess subsurface drainage and operational controls for the entire PVSC tributary area. This model is currently being substantially revised by PVSC. The current version of the INFOWORKS Model does not include any terrain or connectivity to allow evaluation of surface flow and is unknown if the ongoing updates will incorporate this capability.

For PED it is anticipated that the design will utilize the updated INFOWORKS Model with modifications to allow analysis of surface flow using a 2-D terrain. If for some reason the updated INFOWORKS Model is not available or is deemed in-appropriate for use in evaluating the interior drainage surface flooding, the alternative approach will be to model the surface runoff using a 2-D HEC-RAS Model with estimates of the amount of flow conveyed in drainage system based on the best available subsurface INFOWORKS Model.

The need for model refinements during PED and approach will be added to Section 4.7 as recommended.

Recommendation 2:	<input checked="" type="checkbox"/> Adopt	<input type="checkbox"/> Not Adopt
<p>Explanation: The NACCS stage-frequency data was taken from the NACCS coastal model developed by ERDC. The model was calibrated and verified as part of the initial development. A summary of the model results is provided here: http://www.nad.usace.army.mil/Portals/40/docs/NACCS/ExecSum_NumericalModeling.pdf</p> <p>Additional NACCS model details are available on the NACCS website here: https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/ADA621343.xhtml</p> <p>The H&H appendix will be updated with clarifying text.</p>		
Panel Final BackCheck Response (FPC # 10)		
<input checked="" type="checkbox"/> Concur	<input type="checkbox"/> Non-Concur	



Final Panel Comment 11

FEMA-accredited levee criteria have not been considered, which may not be consistent with goals based on similar, on-going HUD-financed flood protection projects.

Basis for Comment

FEMA levee accreditation can reduce flood insurance costs as well as building code flood mitigation requirements applicable to new construction, substantial improvement, and substantial damage projects. The Department of Housing and Urban Development (HUD) considers FEMA accreditation to be a fundamental design goal and benefit of these projects, which are similar in nature and purpose to the TSP. FEMA accreditation is an important goal for large (municipal) scale perimeter flood protection projects like the one proposed. Without FEMA accreditation (or remapping for a non-accredited levee), by regulation, future flood mitigation requirements will be the same (for property owners) as if the project hadn't been constructed.

FEMA accreditation has been a key consideration on similar flood protection projects in New York, New Jersey, and Connecticut. Specifically, the Rebuild by Design projects in New York City, New Jersey and Connecticut funded by Post-Sandy Public Assistance funding and managed through HUD required the following (79 FR 62182 [2014]):

“The grantee must certify in its Action Plan Amendment that it, or the local authority assuming ownership of a levee, will take action to ensure the levee is certified and meets FEMA standards at 44 CFR 65.10 and is subsequently accredited by FEMA, which allows for floodmaps to be re-drawn accordingly, HUD, Third Allocation, 79 Fed. Reg. 62182-01, Oct. 16, 2014. HUD can also waive this requirement if the grantee is unable to get certification once the flood control structure is complete.”

The implications of FEMA accreditation (or lack of) are not discussed or considered in the documentation, including benefit-cost analyses. The implications of remapping for a non-accredited levee are also not discussed or considered in the HSGRR/EA.

Significance – Low

The lack of FEMA accreditation may be perceived, now or in the future, as a project deficiency.

Recommendation for Resolution

1. Confirm with key stakeholders that FEMA accreditation should not be a project goal.

PDT Final Evaluator Response (FPC #11)

Concur	X	Non-Concur
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The Passaic Tidal Coastal Flood Risk Management Project plans have been developed using USACE guidance and formulation policy. The NED plan is an updated plan of the previously authorized USACE project; the LPP is a smaller version of the NED plan. The project is not a HUD-funded project; therefore, FEMA certification is not an objective or design criteria of the project. Potential impacts to future Special Flood Hazard Area mapping of the project area following construction are not considered during the feasibility phase.

While the TSP/LPP is unlikely to meet FEMA certification criteria outlined in 44 CFR 65.10 due to the design height of 14 feet NAVD, the potential for certification and subsequent FEMA accreditation may be investigated during the PED phase.

Recommendation 1: **Adopt** **Not Adopt**

The non-Federal sponsor is already aware that we are not working with FEMA nor with FEMA's standards in mind. This was also explained to the public at our public meetings when the question was asked. Once a project is in place, the local community may request FEMA evaluate the project for potential remapping.

Panel Final BackCheck Response (FPC # 11)

Concur **Non-Concur**

The Panel accepts the PDT's response and understands why the issue is being addressed the way it is.

Literature Cited:

Third Allocation, Waivers, and Alternative Requirements for Grantees Receiving Community Development Block Grant (CDBG) Disaster Recovery Funds in Response to Hurricane Sandy. 79 FR 62182 (2014). Available online at: <https://www.federalregister.gov/documents/2014/10/16/2014-24662/third-allocation-waivers-and-alternative-requirements-for-grantees-receiving-community-developmen>