

Cost Estimate

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)
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1	6/25/2014		Scope definition affects estimation of quantities of materials, labor, equipment, non-construction costs etc.	Scope needs to be clearly defined in order for the estimate to accurately reflect all cost factors.	This can affect project cost, BCR, and production rates during construction, increasing the recommended project cost so that it may no longer be in the public interest to implement. May result in inappropriate selection of TSP.	M	M	H	M	Plan selection	Based upon experience with previous projects. Add what specific projects influenced this choice.	Perform cost-schedule risk analysis to ensure proper contingency added to costs. Ensure scope definition for intermediate and final array of alt plans include adequate detail for respective level of estimate.	Clearly define scope of intermediate and final array of alt plans as soon as possible.	Cost-schedule risk analysis, final array design and cost analysis	Reduce risk of cost inaccuracies.	
2	6/25/2014		CSRA (Cost Schedule Risk Analysis)	Best to perform CSRA as early as possible (TSP). However, you can build the risk register throughout the project development. (i.e.: Use this risk register to feed into the CSRA later)	This could affect project life cycle cost, perhaps rendering project cost so that it may no longer be in the public interest to implement.	M	L	M	L	Contingency, awareness of risk item(s)	Abbreviated risk analyses done to develop preliminary contingency. Full CSRA will be completed at identification of TSP. This has been successful on previous projects. Add what specific projects influenced this choice.	Abbreviated risk analysis required initially, prior to TSP. Initiate CSRA when TSP identified.	Start early to identify risks and plan to mitigate them before reaching TSP.	CSRA tasks.	Better description of risk or possible mitigation of risk due to additional time to complete within the schedule.	
3	6/25/2014		Identification of borrow sources within North and South Offshore Borrow Areas (NOBA and SOBA)	Not identifying the location, not having enough core borings, and adequate quantity for the life of the project.	This can affect project cost and BCR increasing the recommended project cost so that it may no longer be in the public interest to implement.	H	M	M	H	Plan selection	Adequate geotech investigation, information and analyses are needed to ensure the NOBA and SOBA have enough sand to sustain the life of the project.	Compare distance of borrow areas from other projects to dredging cost. Develop range of costs based on possible borrow areas. Complete geotech analysis to identify borrow area.	Identify specific borrow source(s) as soon as possible.	Geotech investigations, cost estimating	Plan selection that is independent of the borrow area location.	

Economics

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1	6/25/2014		Assessment of shoreline armoring in future without project condition.	There is armoring in the study area as identified in the FSM read-ahead materials, Chapter 2, Existing Conditions, Table 2010 indicates ~\$21 Million of existing armor valued by type.	When estimating future without project damages, armor costs (damages) can be significant. In many cases if no Federal project is implemented, homeowners or businesses will build armor at their own expense to protect their property and that can be many thousands of dollars per homeowner. If lots can be permitted for armor (built before 1985 per state regulations), benefits could be underestimated in future w/o project condition.	L	M	L	L	HSDR benefits	Unknown number of structures built prior to 1985. Per state regulatory permitting regulations, if a structure is built after 1985, it could still be permitted for armoring and might be able to get a waiver if the state regulatory model demonstrates it is vulnerable to the 15 yr return period storm.	Verify age of structures and compare to regulations. Create Vulnerability model--if it avail and if not, how might we deal with structures built after 1985, i.e. determine if they are vulnerable to a 15 yr return period storm.	Review structure inventory for buildings older than 1985. If built before 1985, then may know whether need to rerun Beachfx to acct for damages;	Economics, BeachFX	Verify FWOP assumptions in BeachFX model	
2	6/25/2014		New versions/patches of BeachFx	Go backwards and re-run future w/o project condition. Model is sequential - must be recalibrated each time.	Increase of time and money on the study.	M	L	M	L	If have to rerun new version Beachfx :HSDR benefits, cost comparisons for structural alts, net benefits, periodic nourishment costs.	Is there value added for each new model update/patch? Would it even change the selected plan?	Update model every time a new version comes along. Select a model version and stick with it.	Proposal is to restart with the newest version, then continue with this version; can evaluate effects of any updates but will not remodel with new updates. If have to re-run, model only the TSP.	Economics, BeachFX, Engineering	Less time lost for model version updates with little effect on the plan selection.	
3	6/25/2014		Screening measures	Impact on screening measures using ROM costs and future w/o project damages to screen measures. Review screening process through FSM and PGM to determine if it is robust enough.	Screen something out too early that could be a good plan or include something that might have hidden cost.	M	L	L	L	Screening measures	With many alternatives, the risk of screening out the best plan is unlikely.	Will use info from other projects to inform analysis. Keep plans that are close to unity (plausible for economic viability, environmental viability).	Involve Vert team in screening methodology. Write up plan which will at enclosure to 3x3x3 compliance memo scheduled to for transmittal to HQ by 30 Jun 2014. After analysis, have IPR to finalize buy-in from VT.	Economics, BeachFX, plan formulation	Agreement on screening methodology from VT.	
4	6/25/2014		Assumptions going into BeachFx	Having to re-run model numerous times if reviewer disagrees, etc., e.g. content, structure to value ratios, armoring, cost of armor, damage function	Time and cost risk to the study	M	M	H	M	Delay in TSP	Already re-run multiple times; guidance is not clear; lack of expertise on Beachfx within USACE.	Vertical team review of assumptions early. Clear write up of assumptions as part of Economics appendix.	Engage ERDC as a reviewer, include ATR. Do writeup of assumptions and talk it over with PCX reviewers.	Economics, BeachFX	Vertical team agreement on assumptions	
5	6/25/2014		Recreation benefits	Doing a unit day value method (UDVM) rather than a travel cost method. The cap for being able to use UDVM the is 750,000 user events/yr, then must do travel cost method.	UDVM may not adequately estimate recreation benefits, leaving some "on the table".	L	L	L	L	Net benefits	Other study, Flagler County (adjacent county to study area), only 5% of benefits from recreation.	Coordinate with St. Johns County for recreation data / studies / surveys to determine method to use. Start analyses early.	Coordinate w/County re: data availability. Start analyses early.	Economics, BeachFX	Get vertical team agreement on methodology.	
6	6/25/2014		Outdated Real Estate Data	Structure Inventory will need to be updated by the time we submit a report for approval by HQ.	Impact on study schedule and cost.	H	H	L	H	HSDR improvements, net benefits, cost comparisons structural alts	Current guidance suggests that the structure inventory used in FRM and HSDR studies should be as up to date as possible.	Update structure inventory included in budget / schedule.	The structure inventory will be updated and this task has been input into the schedule.	Economics, BeachFX, Real Estate	Appropriate structural inventory data will be utilized for alternative evaluations to determine HSDR benefits.	

Engineering

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1	6/25/2014		Historical Volume Change Analysis	Beachfx does not require this analyses as did previous models. If we don't do it, HQ could ask for it later. (It acts as double check to reviewers.)	Time and cost increase to study.	L	M	M	L	N/A Always fill in. If there is not a decision (whether that decision is made by district, MSC, HQ, or ASA) that is related to the risk, why are we listing this risk?	Historically this has been done, but new Beachfx model does not use historic volume change (Uses MHW line).	Complete historic volume change analysis.	Historic volume change analysis will be completed if time and resources allow. Ask VT if required at rescoping IPR.	Coastal Engineering.	VT agreement on whether historic volume change analysis is needed.	
2	6/25/2014		Determination of design Fill	Design vs. Adv Fill will be presented differently than traditionally done due to change in methodology employed to obtain renourishment interval via Beach-FX. Renourishment interval is based upon risk and is provided as a probability range (e.g. 3-5 yrs) instead of e.g. a specific 4 year renourishment interval.	Might have to hammer something out of Beachfx into a traditional format. This is a communication risk as the modeling isn't set up this way, so benefits will not match exactly.	L	H	L	M	N/A Always fill in. If there is not a decision (whether that decision is made by district, MSC, HQ, or ASA) that is related to the risk, why are we listing this risk?	Risk based probabilistic model and all outputs will be reported in ranges rather than a single optimized value.	Extract information from Beach-fx in traditional format that VT and reviewers are familiar with.	Have a sufficient writeup for Vertical Team to teach this method. Present this methodology to coastal working group since they will be our reviewers. Present to VT at rescoping IPR	Coastal Engineering.	A new (different) description of the recommended plan.	
3	6/25/2014		Genesis modeling	Genesis modeling of preliminary array of alternative plans. Results feed into renourishment needs in BeachFX.	Adding time and money due to unnecessary model runs but an alternative plan may be screened out too early.	M	L	L	L	Plan selection	Modeling always adds time and money to studies so PDT is seeking opportunities to meet the 3x3x3 Paradigm.	Use Genesis only for pre-screened alts and locations (final array only).	Present likelihood and consequence to VTM at IPR.	Coastal Engineering.	VT agreement on GENESIS modeling of final array only.	
4	6/25/2014		Determination of Accessibility, Constructibility, Technique	Feeds into cost estimate. Costs could be underestimate or overestimated and affect plan selection.	Could impact project cost estimates and BCR rendering the TSP not in the public interest.	M	L	L	L	Cost estimates, net benefits, plan selection	Past project experience is that it is too early to determine consequence and likelihood. Need to be at final array to determine.	Compare to other project construction actions within the region. Make this an item of consideration in CSRA.	Present as risk register item for discussion with VT at IPR.	Coastal Engineering, cost engineering	Improved cost estimate.	

Environmental

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1	6/25/2014		Borrow Area issues--cultural resources	Could reduce available amount of sand due to probable cultural resources (shipwrecks, etc)	Limitation on borrow area utilization	L	M	L	L	Cultural resource consultation, determination of final array of alt plans	Previous cultural resource surveys for SJ County.	Cultural resource surveys performed early-on in the study. Note: borrow areas are very large.	Cultural resources surveys scheduled to begin upon receipt of funding.	Environmental coordination, geotechnical analyses re-adjustment	Successful coordination with agencies, minimal impact to cost	
2	6/25/2014		Borrow Area--include BOEM as a cooperating agency	50-year borrow area would likely involve Federal sand so Bureau of Ocean Energy Management (BOEM) would be cooperating agency on NEPA, ESA, EFH, Cultural.	BOEM will be involved in plan formulation and writing the draft report, which could increase study schedule for these tasks by 20 to 30 percent, or about 50 days.	L	H	L	M	Selection of Borrow Area.	Public Law 103-426, enacted in 1994, allows the Bureau (BOEM) to convey, on a noncompetitive basis, the rights to OCS sand, gravel, or shell resources funded in whole, part, or authorized by the Federal Government.	Coordination with BOEM early-on in the study, i.e. starting at Plan Formulation task -- identifying objectives, constraints, identifying potential borrow areas.	Coordination with BOEM early-on in the study, i.e. starting at Plan Formulation task -- identifying objectives, constraints, identifying potential borrow areas.	Plan Formulation, screening borrow area location, draft NEPA	Successful selection of borrow area.	
3	6/25/2014		Nearshore hardbottoms in SH Reach reach	May not be significant risk because the FSM presented the only feasible alternative for SH reach was buy-out of impacted structures and parcels and convert to a County park. County is in process of doing so and most sellers are willing. In addition, early re-scoping to refine lengths of study reaches per public access / parking could potentially eliminate SH Reach reach from the study area.	None, but including in risk register demonstrates to the Vertical Team that the PDT has thought through the potential risk.	L	L	L	L	None, because non-structural alt is only plan to be evaluated. Always fill in. If there is not a decision (whether that decision is made by district, MSC, HQ, or ASA) that is related to the risk, why are we listing this risk?	FSM determined non-structural alt only plan to be evaluated in SH Reach.	Non-structural alt only plan to be evaluated in SH Reach.	Non-structural alt only plan to be evaluated in SH Reach.	N/A--non-structural alt only plan to be evaluated at SH Reach.	N/A--non-structural alt only plan to be evaluated at SH Reach.	
4	6/25/2014		Shorebird nesting window issues	Birds commence nesting during construction. SH reach more probable to experience this risk than other two project areas.	Buffer areas could affect project execution.	M	L	L	L	Compliance w/Fed regs, Corps policy, construction scheduling	SJ County has shorebird nesting.	Include construction sequencing in alternative cost estimates / CSRA.	Do not construct during bird nesting season (Apr 1 - Aug 30)	Environmental coordination, cost estimating	Project executed pursuant to shorebird nesting buffers.	May not affect plan selection as all plans should have similar construction constraints.
5	6/25/2014		EFH	No hardbottoms, standard coordination required.	Time delay.	M	M	L	M	Acres of env resources impacted, compliance w/Fed Regs & Corps policy, mitigation plan (e.g. monitoring for benthic recovery in borrow area), incremental cost analysis	Past consultation experience on EFH.	Early coordination.	Early and frequent communication with NMFS.	Environmental coordination	EFH appropriately coordinated.	
6	6/25/2014		WQC during feasibility phase	Difficult to do during Feas. Agencies still want P&S level of information.	Potential time delay.	M	H	L	H	compliance w/Fed regs, Corps policy, state regs, acceptable permissibility	Past experience is that no projects have gotten feas level WQC permits to date. Time delay.	Coordinate with FDEP as soon as possible to initiate process.	Coordinate with FDEP as soon as possible to initiate process.	Environmental coordination, mitigation costs	WQC as soon as possible	

Geotechnical

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1	6/25/2014		Borrow Area	Inadequate quantity or quality of material	Economic and implementation viability of project. FSM read-ahead indicates 18 months needed for completing geotechnical investigations and analyses. Also, additional study time & cost to collect data if inadequate volume.	M	L	L	L	Cost comparisons for struct alts, det. Net benefits, pot. Beneficial uses of adjacent O&M projects, periodic nourishments	Borrow areas have not been fully developed yet.	Identify sand needs early in the study.	Identify sand needs early in the study.	Geotech, cost estimating	Adequate volume of quantity and quality of borrow material identified.	
2	6/25/2014		Borrow Area	Lease agreement or permit with BOEM	Schedule risk, however, BOEM will be a cooperating agency and will be participating in plan formulation, screening and evaluation of alternatives and writing the draft report with NEPA.	L	M	L	L	Agency review of draft report	Past experience obtaining BOEM leases and tri-party MOAs. Conflicts with other counties' projects. This task is not required to be complete in feasibility phase, can complete in PED.	Start discussion with BOEM as soon as borrow area is identified.	Start discussion with BOEM as soon as borrow area is identified.	Geotech, environmental coordination	Task can be completed in PED phase.	Risk is low for study.

Plan Formulation

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1	6/25/2014		Guidance currently unclear as to path forward with 3x3x3 paradigm. This is not appropriate to list here- not a scoping choice or task	PDT could steer study down path not in concert with higher authority interpretation of 3x3x3 paradigm.	Schedule Impact	M	M	M	M	All	Many unknowns at this time	Engage vertical team through IPRs, re-scoping meeting and decision point milestone IPRs.	Obtain full clarification at IPRs.	Plan Formulation	3x3x3 compliant process	
2	6/25/2014		Refinement of study reach lengths for analyses.	NFS and / or Vertical Team may not agree with refined study reach lengths.	Schedule impact, could impact Beach-FX modeling.	M	M	M	M	All. Need to be more specific.	Vertical Team meeting 11 Jun 2014 directed PDT to refine study reach lengths at beginning of study, possibly using public accessibility / parking as the tool to do so.	Include & obtain sponsor buy-in at re-scoping meeting when this is discussed. Obtain Vertical Team buy-in immediately after re-scoping meeting.	Include & obtain sponsor buy-in at re-scoping meeting when this is discussed. Obtain Vertical Team buy-in immediately after re-scoping meeting.	Plan Formulation	Study proceeds seamlessly	
3	6/25/2014		Concurrent ATR, public, policy, IEPR reviews	Review times could impact 3x3x3 paradigm schedule	Schedule Impact	L	L	L	L	Draft report review	ATR takes ~ 6 weeks, IEPR will most likely not be required per HQ VT member 12 Jun 2014 email. Concurrent reviews actually save study time and issue may not be as critical as initially envisioned.	Schedule a full rigorous DQC to ensure a quality product before concurrent reviews.	Schedule a full rigorous DQC to ensure a quality product before concurrent reviews.	Plan Formulation	Quality draft report for reviews.	

Project Management

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1	6/25/2014		New budget estimate falls within the new 3x3x3 guidance, \$3M from the restart point, which is now forward (per 11 Jun 2014 VT meeting)	Bust in the current schedule or estimate. \$3M starts now per 11 Jun 2014 VT meeting and 3 years starts from receipt of FY15 funding.	Redo re-scoping and budget to reduce time and cost below \$3M and 3 years.	L	L	L	L	Re-scoping guidance	Vertical Team meeting 11 Jun 2014 guidance is that schedule restart is upon receipt of FY15 funding.	Hold re-scoping meeting.	Schedule Re-scoping IPR as soon as possible (end of FY14).	All	3x3x3 compliant study	
2	6/25/2014		From Plan Formulation, Risk #4, insufficient public access / parking in SPV reach and same possible issues in SH Reach reach.	Lack of access could affect determination of study area length, per 6-11-14 re-scoping VT meeting. If no access, affects the final cost sharing.	If insufficient public access provided, sponsor would pay more for project implementation. Sponsor understands ramifications of insufficient public access.	L	M	L	L	Plan formulation, cost sharing	Based on existing Federal project.	Further coordination with sponsor on access.	Include further coordination with sponsor on access. Include maps and other data in the report to describe cost sharing.	Plan formulation	Confirm cost sharing percentages	
3	6/25/2014		Study Execution	If no additional Federal funds received in FY15, study will be delayed. Accelerated funds are anticipated from NFS in FY15.	Accelerated Funds Agreement (AFA) under review.	H	H	M	H	All. Need to be more specific.	Lack of Federal funding.	Continue coordination / follow-up of AFA review. Budget for Federal funds .	Continue coordination / follow-up of AFA review. Budget for Federal funds.	All	Receive sufficient Federal funds to meet Chief's report milestone.	

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(A) Item	(B) Date entry was last updated.	(C) Name(s) of person(s) assessing the task	(D) This is the task, decision, problem, question, issue, event, hazard, or opportunity that is to be managed.	(E) Briefly identify the risk. Considering the entry in column D, what can go wrong and how can it happen?	(F) Describe the consequence of the column E risk. If things do "go wrong" in the way described what is the specific consequence for the study or project outcomes? (List the most significant consequence first if more than one.)	(G) If the most significant consequence in column F occurs what is its potential magnitude?	(H) What is the likelihood that the most significant consequence in column F will occur?	(I) How great is the uncertainty about either the consequence or likelihood of the risk identified in column E?	(J) Qualitative risk rating from lookup table, i.e. Column (G) & Column (H)	(K) Identify all the decision criteria that could be affected by the risk identified. If an important decision not represented among the decision criteria is affected, identify it here.	(L) Enter specific evidence used to support the consequence, likelihood and risk ratings.	(M) Enter options for reducing the risk.	(N) Enter any preferred course for managing the risk. Tolerate the risk is the default option. This should be one or more of the options listed in column M	(O) Identify any other study tasks that could be affected by the outcome of the risk identified for this entry.	(P) Describe the effect of your recommended course of action on the study or project outcomes. This should be filled in after the recommendation was completed.	(Q) Make note of any significant information not provided in the other columns.
Risk #	Date	Assessors	Task	Risk and its cause	Consequence	Consequence Rating	Likelihood Rating	Uncertainty Rating	Risk Rating	Decision(s) Affected	Evidence for ratings you gave.	Risk Management Options	Recommendations	Study Tasks Affected	Outcome	Notes
1	6/25/2014		Easements, land owner who doesn't want the project	Significant delay in land certification; would have to go through eminent domain.	Would have large impact on costs and admin costs.	H	M	H	H	RE plan	Previous projects have had this problem. Add what specific projects influenced this choice.	Compliance w/Fed and Corps policy	As project progresses, Sponsor can help us get a feel for public opinion. More public outreach as study approaches final array.	Real Estate coordination with PDT and the sponsor	Acceptable RE easements.	
2	6/25/2014		Construction staging area in some areas due to lack of public access	Location could have issues: unknown utility impacts.	Could be some cost or schedule delays during construction.	M	M	L	M	Cost estimate, completion of RE plan for draft report	Previous projects have had this problem. Add what specific projects influenced this choice.	RE mapping done early to begin id and analyses of staging areas, cost comparisons for alts	Make sure engineering team researches early; keep it on PDT radar	Real Estate, cost engineering, coordination with Sponsor	Adequate staging areas for construction	
3	6/25/2014		Ownership issues	Not knowing who owns what (county, state, private) and multiple ownership rights.	Would be a time delay and could eventually lead to eminent domain as worst case.	L	L	L	L	RE plan	Previous projects have had this problem. Add what specific projects influenced this choice.	Cost comparisons for structural alts, compliance w/Fed & Corps policy	Keep on radar; start early if we need to do title search	Real Estate, Sponsor	Corps compliant RE Plan	