

## SCOPE OF WORK

### General

This effort is a continuation of the San Jacinto River and Tributaries Sediment Removal and Sand Trap Development Work Order No. 1. The Preliminary Engineering Report (PER) will focus on sediment trapping facilities located along the West Fork San Jacinto mainstem to reduce sediment loads flowing into Lake Houston. ~~Phase 1 of this effort~~The PER will ~~begin by providing a recommendation on selecting one (1) identified in-channel trap concept from the two previously identified in-channel trap concepts at Site 4 (ST004) to be furthered in the PER.~~provide a recommendation on which two of the three evaluated traps at Site 4 (ST004) should be furthered into Phase 2. Phase 2 will include development of the PER for these two sites.

This effort will conclude with recommendations for the final design of one (1) or two (2) sediment traps to be advanced in future project phases.~~The recommendations will include the design of one (1) in-channel sand trap and one (1) out-of-channel sand trap.~~

The CONSULTANT shall provide:

### **TASK 1201 – Project Management** **FMPR0004.1001.2C002.30020**

#### **1201.1 Project Management**

1. Project Management: Provide for the management of the resources of the CONSULTANT to meet the technical, financial, and schedule requirements of SJRA. This shall include the overall management of the project and the various specialized discipline teams responsible for the development of the project. Schedule and participate in meetings (in person or by phone, as appropriate) with SJRA, CONSULTANT's sub-CONSULTANTS, SJRA's third party CONSULTANTS, and PARTNERS (as appropriate). Harris County Flood Control District (HCFCD) and the City of Houston (CoH) will be invited to all project meetings, and project deliverables will be provided to HCFCD and CoH for the opportunity to review.

#### **1201.2 Project Status Reports and Invoicing**

1. Project Schedule Development and Updates: Develop, manage, monitor, update, and coordinate (in coordination with SJRA staff) project schedule throughout the life of the project based on changes or necessary updates.
2. Project Status Reports: Provide written project status reports to SJRA once per month throughout the duration of the project. Project status reports shall include, at a minimum, a summary description of activities completed, description of activities planned for the next 30 days, financial status of the project, status of schedule for the project, and identification of any technical or other issues which may have an impact on the overall project budget and/or schedule. Project status reports shall be provided to SJRA with each invoice.
3. Invoicing: CONSULTANT shall submit invoices monthly by the 10th day of the month following the month being invoiced for. Invoices shall include a record of CONSULTANT's activities and deliverables completed within the month, and note activities planned for the next month. Invoices shall be submitted to ap@sjra.net. Coordinate with SJRA Project Manager to

determine appropriate format and content for invoice submittals.

4. CONSULTANT shall notify assigned SJRA Project Manager in writing that CONSULTANT has expended eighty percent (80%) of any single task amount in the currently approved SJRA Professional Services Agreement and/or Work Order amount within seven (7) calendar days of CONSULTANT reaching this expenditure milestone (80% expenditure milestone). Written notification shall be provided regardless of compensation type (i.e., lump sum, cost-plus multiplier, time-and-materials, etc.). Written notification shall include a statement by CONSULTANT indicating whether remaining amount is adequate to complete current SJRA approved Professional Services Agreement and/or Work Order Scope of Work task.

### **1201.3 Document Control**

1. Document Control: SJRA shall utilize a Procore site to transmit data for this project. CONSULTANT shall utilize this system as a management tool and repository of all data, reports, photographs, letters, memoranda, design documents, models, and other information as directed by SJRA.
2. CONSULTANT shall preserve and, when requested, make available within five (5) calendar days to SJRA, the City of Houston and Harris County Flood Control District in their respective home counties the books, transaction history, invoices, charges and other records relating to payment of preliminary design costs contemplated by this Work Order No. 2 for a period of six years after the expiration of the Interlocal Agreement by and among SJRA, the City of Houston and Harris County Flood Control District related to the preliminary design costs contemplated by this Work Order No. 2. Representatives of the City of Houston and Harris County Flood Control District shall have the right to examine and review all books, records, and billing documents which are directly related to performance or payment of this Work Order No. 2. This right of audit extends to the records of CONSULTANT's subconsultants or subcontractors. In the event that any terms of Professional Services Agreement 20-0024 conflict with the terms of this section, this section shall govern with respect to this Work Order No. 2.

Deliverables:                      Monthly Status Reports

*Monthly Status Reports shall be submitted electronically (.pdf) to SJRA via email to [ap@sjra.net](mailto:ap@sjra.net), with invoices, no later than the 10<sup>th</sup> day of every month to coincide with SJRA invoicing requirements throughout the duration of the Work Order.*

Meeting Agendas, Handouts, and Minutes

*Proposed agendas: Submit one (1) electronic copy (editable version) at least three (3) calendar days prior to meeting. CONSULTANT will provide necessary number of hard copies at in-person meetings.*

*Meeting minutes: Submit draft meeting minutes (electronic editable version) within three (3) calendar days of meeting. Receive SJRA comments. Submit one electronic version (.pdf) via Procore of final meeting minutes within three (3) calendar days of receipt of comments on the draft meeting minutes.*

#### **1201.4 Project Kickoff Meeting**

1. A project kickoff meeting between the CONSULTANT, SJRA and PARTNERS will be held at the beginning of the project to accomplish the following:
  - a. Review the CONSULTANT's scope of work and discuss project expectations and goals.
  - b. Review the CONSULTANT's proposed schedule and critical milestones.
2. This meeting is to be held at SJRA's Woodlands Division office, or other location as directed by SJRA, and is anticipated to last up to two (2) hours.
3. An internal kickoff meeting will be held with FNI staff and its subcontractor (survey). Scope of work, schedule and right of entry will be discussed.

#### **1201.5 Project Update Meetings**

1. Project Update Meetings: CONSULTANT shall participate in up to eight (8) one-hour conference call meetings, in addition to other meetings described in this scope of work, with SJRA and PARTNERS to present detailed status updates of the project's progress and budget and discuss any major issues identified.
2. CONSULTANT understands that all physical (in person) meetings shall occur at SJRA's Woodlands Division office or as directed by SJRA. All meeting agendas, workshop planning information and handouts, meeting notes, and other applicable information pertaining to each specific meeting or workshop shall be developed and distributed by the CONSULTANT.

#### **1201.6 Quality Assurance and Quality Control**

1. CONSULTANT shall disseminate pertinent project information internally and externally, implement Quality Assurance (QA) and Quality Control (QC) measures, and submit deliverables as required per agreed-upon project schedule.
2. Three Quality Assurance meetings will be completed.
3. Quality Control of deliverables related to subsequent scope of work tasks will be performed as part of those tasks.

#### **Phase 1: Sediment Trap Selection**

~~The purpose of Task 1202 is to provide a recommendation of which of the two in-channel sediment traps will be furthered in the Preliminary Engineering Report (PER). The PER will be developed in Phase 2. Sediment trap efficacy and stream stability response will be used as evaluator metrics in creating the recommendation. Sediment trap efficacy and stream stability response will be completed for the out-of-channel sediment trap as well. The out-of-channel trap was previously identified to be included in the PER. Sediment trap efficacy will estimate the range of rates at which the in-channel traps and out-of-channel trap will collect sediment. Stream stability will be used to characterize upstream and downstream impacts of sediment removal.~~

The purpose of Task 1202 is to provide a recommendation on which of the three sediment traps will be

furthered in the Preliminary Engineering Report (PER). The PER will be developed in Phase 2. Sediment trap efficacy and stream stability response will be used as evaluator metrics in creating the recommendation. Sediment trap efficacy will estimate the range of rates at which the traps will collect sediment. Stream stability will be used to characterize upstream and downstream impacts of sediment removal. The three traps to be evaluated as part of Phase 1 include 01OC, 01IC, and 02IC. Previous trap designations as in-channel (“IC”) or out-of-channel (“OC”) have changed in some instances due to the rerouting of the West Fork San Jacinto River.

**Task 1202 – Sediment and Geomorphic Analysis**  
**FMPR0004.1001.2C002.30041**

**1202.1 Sediment Removal and River Stability Response**

1. Calculate an annual sediment load upstream and downstream of Site 4 (ST004). Compare these loads to the annual sediment loads of Spring Creek. Relate trapping sediment removal to upstream river stability and downstream river stability. Annual sediment load consists of suspended sediments and bedload.
  - a. Use previously collected sediment data from the following three USGS stream gage locations to calculate annual suspended sediment volumes and create sediment rating curves for each location:
    - i. Highway 99 bridge (closest gage upstream of proposed sediment traps)
    - ii. Interstate 69 bridge (closest gage downstream of proposed sediment traps, located on Spring Creek/West Fork confluence)
    - iii. Interstate 45 bridge (on Spring Creek)
  - b. Predict bedload volumes using previous LiDAR analysis results which measured streambank sediment erosion and aggradation.
  - c. Compare the trap's estimated annual sediment removal volume to calculated annual sediment loads in the rivers. Comparisons shall occur for the following combinations:
    - ~~Out of channel trap (ST004\_01OC)~~
    - ~~In channel trap (ST004\_02IC and ) and Out of channel trap (ST004\_01OC)~~
    - ~~In channel trap (ST004\_03IC01IC) and Out of channel trap (ST004\_01OC)~~
  - d. Evaluate if sediment trap will lead to unstable stream conditions downstream or upstream by evaluating the following:
    - Compare the sediment supply ~~to from~~ the West Fork (supply from eroding banks, landscape erosion, etc.) to the ability of the West Fork to move this sediment (sediment capacity). Use aerial photography, LiDAR analysis results (aggradation) and empirical equations to evaluate if the river's current sediment supply versus sediment capacity relationship is in excess, in balance or in deficit. Estimate the potential changes to the river's current relationship after the traps are built.
    - Compare the percentage of the estimated annual sediment load removed by the traps to the calculated annual sediment load upstream of the traps, downstream of the traps and near Lake Houston.

### 1202.2 Geomorphic Site Visit

1. Perform a geomorphic site visit to reevaluate the project locations at Site 4 (ST004) and complete the following:
  - a. Map potential design and construction opportunities and constraints at each potential project locations.
  - b. Map and measure river stability characteristics upstream and downstream of the project locations.
  - c. Map bankfull indicators, survey bankfull elevations, measure particle size distribution of depositional feature surface and subsurface at each ~~in-channel~~ trap to predict the range of sediment sizes that may deposit in ~~in-channel~~ traps ~~and the out-of-channel trap~~. Map and survey bankfull indicator elevations near the USGS stream gage at Highway 99 bridge.
  - d. Map channel cross sections at key locations. Provide GPS information to surveyor.
  - e. The geomorphic site visit will be completed by foot and using a boat.

### 1202.3 Two-Dimensional Sediment Model for Sediment Transport

Two-dimensional (2D) sediment transport modeling will be used to further the ~~in-channel~~ sediment trap recommendations. Stream power, shear stress, transport capacity and ~~river bed/riverbed~~ elevation changes will be used to recommend ~~one in-channel sediment trap over the other~~ which two traps should be furthered to Phase 2. ~~2D sediment transport modeling will be completed for the out-of-channel trap as well.~~

- a. An existing conditions 2D model terrain will be developed using data from the San Jacinto Regional Watershed Master Drainage Plan 1D/2D model (Drainage Plan Model). Existing terrain will be developed using bathymetric data and detailed topographic survey data and the most recent readily accessible LiDAR data for floodplain elevations. Bathymetric data and detailed topographic data shall be collected by C.H. Fenstermaker and Associates, LLC (CHF). The CHF proposal is provided in Attachment C.
- b. Hydrologic boundary conditions will utilize the existing Drainage Plan Model's unsteady flow hydrographs and normal hydraulic depth. The following discharges will be run in the 2D Model: the discharge when river water first enters the trap (first discharge), average daily discharge, ½ bankfull discharge, bankfull discharge, 1.5 bankfull discharge, 1-year annual flood and 10-year annual flood. Peak discharges will be obtained from previous study efforts (referred to as the Conceptual Design Report), daily flow records and annual statistical records. Hydrographs for the first discharge, average daily discharge, ½ bankfull discharge, bankfull discharge, 1.5 bankfull discharge, and 1-year annual flood will be developed using USGS stream gage data. The 10-year hydrologic data is available within the Drainage Plan model.
- c. Proposed conditions 2D model terrain will be developed using the traps' dimensions from the Conceptual Design Report. Minor adjustments to these design elements may be ~~made~~ permade according to the findings from the geomorphic site visit or other factors as appropriate. A terrain for each trap ~~-(2 in-channel traps, 1 out-of-channel trap)~~ will be created. -Additionally, terrains with the following combinations will be created:

i. ST004\_02IC and ST004\_01OC

ii. ST004\_01OC and ST004\_01IC

A total of five terrains will be made. A finer modeling mesh will be created in the regions around the proposed traps.

~~e. A terrain with an in channel trap and an out of channel trap will be created for each combination of in channel traps and out of channel~~

~~d. trap. A total of five terrains will be made. A finer modeling mesh will be created in the regions around the proposed traps.~~

~~e.d.~~ The sediment rating curve from Task 1201.1 will be applied as a boundary condition for all storm events. Assume the following model conditions which are appropriate for fine sand bedload systems: Laursen-Copeland sediment transfer, Rubey fall velocity equation, and Hwang flocculation settling velocity formula.

~~f.e.~~ Complete a 2D model run for each hydrologic conditions (6 hydrologic conditions) and each terrain (30 runs total). Report changes in shear stress and sediment transport behavior.

#### 1202.4 FLOWSED/POWERSED Modeling

1. Develop FLOWSED/POWERSED models to analyze the efficacy of the ~~in-channel~~ sediment traps as they fill with sand. Efficacy may diminish as the traps fill up therefore emptying more frequently could be a preferred management strategy. Calibrate the models' sediment load input using bankfull discharge (calculated from 1202.2.c's bankfull elevation) and the corresponding sediment load measured by the USGS stream gage. Calibrate the models' ~~manning's~~ manning's values using 2D modeling outputs. Analysis to be performed under the following conditions for each ~~in-channel~~ trap:
  - a. Existing Conditions (completed in Conceptual Design Report)
  - b. Proposed Sediment Trap empty (100% capacity)
  - c. Proposed Sediment Trap half-full (50% capacity)
  - d. Proposed Sediment Trap three-quarters full (25% capacity)

A total of ~~six-nine (69)~~ modeling runs will be completed. A modeling run consists of three (3) cross-sections along the sediment traps at each sediment trap. Each cross section will reflect the trap's geometry if is empty, half-full and three quarters full. If trap dimensions have changed (task 1203.3.c) the updated dimensions will be used.

1202.5 ~~Sand In-Channel~~ Trap Recommendation and Stream Stability Memorandum

1. Develop and submit a draft interim deliverable documenting the findings of sediment trap recommendations, sediment transport analyses and geomorphic assessment. Deliverable shall document evaluation of stream power pre and post sediment trap implementation and document possible outcomes of sediment trap implementation. Discuss potential upstream and downstream responses to sediment removal. Preliminary constructability and sediment trapping efficacy will also be evaluated. Provide recommendation for ~~a single~~ two (+2) proposed ~~in-channel~~ sediment traps.
2. Respond to one round of comments from SJRA and PARTNERS with a comment resolution table.
3. Utilize a project update meeting to review responses to comments table.

4. Address comments and submit Final Version of Memorandum.

Deliverables:      Draft Sediment Removal and Stream Stability Memorandum via Procore (editable version) within ~~92-473~~ calendar days of NTP.

Receive Comments on Draft from SJRA and partners within ~~113-494~~ days of NTP

Submit Final Version Sediment Removal and Stream Stability Memorandum via Procore (editable version) within ~~134-501~~ calendar days of NTP.

## **Phase 2: Preliminary Engineering Report Development**

Once ~~a single~~two (2) in-channel trap ~~is~~traps are selected by SJRA and PARTNERS the PER will be furthered. The continuation of the PER will include hydraulic impact assessment, environmental evaluation, design development and opinion of probable construction cost for the ~~in-channel trap, the out-of-channel trap~~two (2) in-channel individual traps and the combination of traps.

### **Task 1203 – Hydraulic Impact Analysis** **FMPR0004.1001.2C002.30052**

#### **1203.1 Hydraulic Impact Analysis**

1. Hydraulic Analysis
  - a. Review and run the effective hydraulic model for the West Fork San Jacinto River.
  - b. Create three model geometry files by updating the regulatory effective hydraulic model with cross sections. Create a geometry file for each proposed ~~in-channel trap, out-of-channel trap~~ and a combination of both traps. Add cross sections which bound the proposed activities. Cross section geometry will be generated from detailed survey data and LiDAR.
  - c. Amend corrected regulatory effective model geometry with proposed condition geometry. Run four model runs under the following conditions for 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year flood event: one (1) existing conditions, two (2) individual trap runs and one (1) combination trap run. ~~(in-channel trap and out-of-channel trap)~~. Report changes in water surface elevations and velocities due to proposed conditions.
  - d. Utilize terrains and geometries developed in 1202.3 and run four model runs under the following conditions for 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year flood event: one (1) existing conditions, two (2) individual trap runs and one (1) combination trap run. ~~(in-channel trap and out-of-channel trap)~~. Report changes in water surface elevations and velocities due to proposed conditions.
  - e. Identify possible mitigation options if needed to offset unwanted rises in water surface elevations or velocities.

**Task 1204 – Environmental Evaluation**  
**FMPR0004.1001.2C002.30200**

**1204.1 Desktop Evaluation**

1. Conduct a desktop evaluation of project area utilizing a variety of resources including aerial imagery, topographic maps, National Wetland Inventory (NWI), National Hydrography Dataset (NHD), and LiDAR. This task would aid in preparation for required fieldwork, including the development of field maps.

**1204.2 Pedestrian Survey**

1. This effort would include a team of FNI environmental scientists that would conduct a multi-day field visit to the project area to complete the following tasks. FNI assumes SJRA would coordinate access to the site and the visit(s) would occur during “normal” weather and base flows.
  - a. Delineate the ordinary high-water mark (OHWM) of the San Jacinto River as well as the boundaries and/or jurisdictional limits of any other potential waters of the U.S. identified in the project area.
  - b. Identify potential state or federally-listed threatened or endangered species’ habitats in the project area.
  - c. Identify any visible signs of contamination or hazardous materials in the project area.
  - d. Collect sediment and water quality (WQ) samples to establish baseline data for the project area. The samples would be analyzed via North Water District Laboratory Services (NWDLS); their proposal, including the parameters they would test for, is provided in Attachment D. The sampling plan is as follows:
    - i. Upstream Reference
      1. One water sample in the river + measurement of WQ parameters
    - ii. Proposed ~~In-Channel~~ Trap Location (~~ST004\_04HC01IC02IC~~)
      1. One water sample in the river + measurement of WQ parameters
      2. One composite sediment sample (of three close proximity replicates) in the river adjacent to the trap location
      3. Three sediment samples across aggrading bend in river where ~~in-channel~~ trap is proposed
    - iii. Proposed ~~Off-Channel~~ Trap Location (~~01OCST004\_01OC~~)
      1. Three water samples (surface, middle, bottom) + measurement of WQ parameters at five locations within the sand pit
      2. One composite sediment sample (of three close proximity replicates) at five locations within the sand pit
    - iv. Proposed ~~In/Out-of-Channel~~ Trap Location (~~03ICST004\_02IC~~)
      1. One water sample in the river + measurement of WQ parameters
      2. One composite sediment sample (of three close proximity replicates) in the river adjacent to the trap location

3. Three sediment samples across aggrading bend in river where ~~in-~~  
~~out-of-channel~~ trap is proposed
- v. Downstream Reference
  1. One water sample in the river + WQ parameters

#### **1204.3 Cultural Resources Evaluation**

1. Conduct desktop evaluation of cultural resources in the project area. FNI would utilize best available public resources to evaluate the project area for the presence of cultural resources/the potential for buried cultural resources in the project area. This evaluation would be reviewed by an FNI Registered Professional Archeologist (RPA).
2. Submit evaluation to the Texas Historical Commission (THC) to demonstrate compliance with the Antiquities Code of Texas (ACT) and Section 106 of the National Historic Preservation Act (NHPA). If the THC requires additional studies (e.g., archeological survey) those services could be provided at an additional cost.

#### **1204.4 Phase I Environmental Site Assessment (ESA)**

1. FNI would acquire a regulatory database report and utilize information collected from the desktop evaluation, pedestrian survey, and sediment/water quality sampling to prepare a report based on standards published by the Environmental Protection Agency (EPA) All Appropriate Inquiries (AAI) Final Rule and ASTM International (ASTM) under Standard Guideline E1527-13, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process." The Phase I ESA would be provided as a standalone report; if it is determined that additional studies are required (e.g., Phase II or III) those services could be provided at an additional cost.

#### **1204.5 Joint Evaluation Meeting (JEM)**

1. Coordinate with the U.S. Army Corps of Engineers (USACE), Galveston District to setup a JEM. SJRA and potentially PARTNERS, FNI, USACE and cooperating agencies, such as the Texas Commission on Environmental Quality (TCEQ) and Texas Parks and Wildlife Department (TPWD) would meet to discuss the proposed project and regulated activities required during construction to attempt to receive guidance on permitting under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act (CWA) and any other relevant acts to better understand what will be required during the design phase of the project.

#### **1204.6 Environmental Evaluation Report**

1. Preparation of an Environmental Evaluation Report. FNI would utilize the information gathered in Tasks 1204.1-1204.5 to develop a report that provides guidance on environmentally sensitive areas in and around the project area and project permitting requirements.

Deliverables:

*Lab Results, Phase I ESA, Cultural Resource Evaluation and Environmental Evaluation Report will be included in the Preliminary Engineering Report as described in Task 1205.4.*

**Task 1205 – Preliminary Engineering Report**  
**FMPR0004.1001.2C002.30060**

**1205.1 Design Development**

1. Configure ~~one two (12) in channel traps and one (1) out of channel sediment trap~~ based upon the findings documented in 1202 through 1204 and optimize the designs to enhance performance and minimize project costs.
2. Develop the operations and maintenance (O&M) requirements and frequency of O&M activities associated with the proposed sediment traps.
3. Estimate the annual sedimentation rate (the volume of trapped sediment in any given year) within the ~~in channel traps and out of channel trap~~. ~~For the in channel trap, a~~ relationship between trapped sediment volume (i.e. efficacy) and frequency will be created using the models and data analysis from: task 1202.3, (2D sediment transport modeling), task 1202.4 (POWERSED/FLOWSED) and the flow duration curve (from the Conceptual Design Report). This relationship will be used to calculate an annual sediment load (tons per year) that should be trapped in any given year. This load will be converted to a volume assuming a bulk density. ~~For the out of channel trap, the annual sedimentation rate will be estimated by calculating the percentage of the annual sediment load that is in suspension high enough to flow into the out of channel trap.~~
4. Evaluate constructability of the proposed improvements, with consideration of care and control of water (e.g., surface water and groundwater); mobilization and site access/lay-down area opportunities; evaluation of anticipated earthwork activities; precautionary measures required for utilities, pipelines, and railroads; acquisition of property and temporary construction easements; and required traffic control measures and any other pertinent considerations.

**1205.2 Preliminary Design Plan Production**

1. Develop 30% preliminary design plan, and necessary details associated with each of the proposed sediment traps. Typical cross-sections for each proposed project will also be developed. These depictions of each proposed project will be conceptual, and only enough detail provided to quantify costs and understand a likely methodology by which a qualified contractor will likely perform the work. The plan production will consist of the following three sheets.
  - i. Plan and profile view of ~~each~~ ~~the in channel trap~~ (one sheet each)
  - ~~ii. Plan and profile view of the out of channel trap~~
  - ~~iii. ii.~~ Typical section and cross-section sheet

**1205.3 Opinion of Probable Cost**

1. Develop an Opinion of Probable Construction Cost (OPCC) for each of the proposed sediment traps individually and under a single mobilization.

### **1205.4 PER Development**

The PER will generally be structured as follows:

1. Existing Physical Conditions – Detailed description of location, topography, land use, right of way, pipelines, and utilities.
  - a. Summarize the project background/purpose, project location, and other general information.
  - b. Summarize the surveying efforts, and environmental investigation.
  - c. Summarize the field inspection efforts performed by FNI.
  - d. Potential figures to be included in this section include: a project location map, an aerial overview which demarcates the various rights of way (ROW) and easements in the vicinity of the West Fork, an aerial overview which shows the alignment of applicable utilities and pipelines, etc.
2. Documentation of Tasks 1202 through 1204.
3. Proposed Physical Conditions – Detailed description of project layouts, estimated efficacy, impact analysis and anticipated mitigation needs, operations and maintenance procedures and requirements, utility conflicts, environmental issues and probable permit needs, operations and maintenance requirements, and any other consideration of impact to the project.
  - a. Summarize each of the sand traps and discuss the associated considerations.
  - b. Documentation of Tasks 1205.1 through 1205.3
4. Discussion on methodology for determination of effectiveness of pilot traps after installation.

### **Draft PER**

1. Submit a draft PER to SJRA.
2. Respond to one round of comments from SJRA and PARTNERS with a comment resolution table.

### **Final PER**

1. Address one (1) round of comments received from SJRA and PARTNERS on draft PER. Incorporate comments and submit final version.

#### Deliverables:

*Submit Draft Preliminary Engineering Report to SJRA via Procore (editable version) within 225-564 calendar days of NTP*

*Receive Comments on Draft from SJRA and partners within 246-585 days of NTP*

*Final Preliminary Engineering Report to SJRA via Procore (editable version) within 274-599 calendar days of NTP.*

**Task 1206 – Stakeholder Outreach**  
**FMPR0004.1001.2C002.3420**

**1206.1 Stakeholder Meetings**

1. CONSULTANT shall participate in up to three (3) stakeholder meetings, in addition to other meetings described in this scope of work, to present project updates, exhibits, and answer questions. All meeting agendas, information and handouts, meeting notes, and other applicable information pertaining to each specific meeting shall be developed and distributed by the CONSULTANT as requested by SJRA.

**Task 1207 – Additional Services**  
**FMPR0004.1001.2C002.3995**

**1207.1 Additional Services**

1. Additional Services to be performed by the CONSULTANT, if authorized by the SJRA, which are not included in the above-described scope of work, are described as follows:
  - a. Any items of work noted as not included throughout the scope.
  - b. Any items of work that are required if conditions evolve causing redesign.
  - c. Coordination and Preparation for additional Stakeholder Meetings.
  - d. Coordination with regulatory agencies beyond what is stated in task 1204.
  - e. Coordination with the APO which operates near Site 4 (ST004).
  - f. Any other efforts identified by SJRA outside of the above defined scope of work.