SHORELINE CLEANUP ASSESSMENT TECHNIQUE

WORK PLAN

Second 80's Fire
Deer Park, Texas

This incident-specific SCAT plan is approved:

FOSC	Date
SOSC	Date
RPIC	Date

Acronyms:

ESI – Environmental Sensitivity Index
SCAT – Shoreline Cleanup Assessment Team
EUL – Environmental Unit Leader
NEB – Net Environmental Benefit
QA/QC – Quality Assurance/Quality Control
SOS – Site Oiling Survey
STR – Shoreline Treatment Recommendation
SIR – Shoreline Inspection Report

9966790

TCEQ – Texas Commission on Environmental Quality

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1. PLAN PURPOSE AND OBJECTIVES

Shoreline Cleanup and Assessment Technique (SCAT) is a systematic method for surveying an affected shoreline after an oil spill. The SCAT approach uses standardized terminology to document shoreline oiling conditions. SCAT is designed to support decision-making for the cleanup of visible product from shorelines. It is flexible in its scale of surveys and in the detail of datasets collected.

SCAT surveys assess initial shoreline conditions, and ideally work in advance of operational cleanup. Surveys continue during the response to verify shoreline oiling, cleanup effectiveness, and eventually, to conduct final evaluations of shorelines to ensure they meet cleanup endpoints.

This work plan has been developed to describe the process for initiating and implementing SCAT actions for shorelines impacted by the **2nd 80's Fire**.

This incident involved the release of several petroleum products which may have mixed together and/or with firefighting foam. The remainder of this plan uses the term "product" to refer to the mix of visible materials that may have been released during the event. In instances where the term "oil" is part of the SCAT lexicon, the term is retained and is meant to refer to product.

a. Purpose

The SCAT process for this incident is intended to:

1. Systematically survey and document the area visibly affected by product to provide rapid and accurate geographic description of the shoreline oiling conditions and real-time issues or constraints;
2. Recommend treatment or cleanup options for visibly fouled shorelines to Operations and Unified Command (UC);
3. Recommend shoreline cleanup endpoint standards (for visible product) to Operations and UC;
4. Monitor and evaluate shoreline treatment;
5. Conduct shoreline inspection surveys to confirm No Further Treatment (NFT) status with respect to visible product, and
6. Manage data collected from shoreline surveys.

b. Objectives

The objectives of the SCAT process for this incident are to:

1. Quickly collect data on shoreline conditions using standard protocols and mechanisms;
2. Utilize descriptions of visible affects to enhance and expedite shoreline treatment planning, decision-making, and response activities; and

Commented [NB1]: Impacted shoreline….

Commented [NB2]: Though there is an explanation of the use of the term, please do not use it as proposed. The recommendation is the use a word that represents the explanation, such as 'mixture' or another similar term.

Also, the mixture is of chemicals and oil. The use of the phrase 'several petroleum products' does not clearly represent the released materials/mixture makeup.

Correct throughout the document and subsequent documents.

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3. Assure that a "net environmental benefit" (NEB) is achieved by any specific shoreline cleanup.

c. Fundamental Principles

The fundamental principles of the shoreline assessment surveys include:

1. A systematic assessment of shorelines in the affected area as identified during the RAT (Rapid Assessment Technique) process;
2. A division of shorelines into geographic units or "segments";
3. The use of a standard set of terms and definitions for documentation;
4. A survey team that is objective and trained; and
5. The timely provision of data and information for decision making and planning.

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2. HEALTH AND SAFETY

The Site Safety Officer has prepared a Site Safety Plan addressing safety issues related to the incident. The Site Safety Plan addresses the principal safety and health hazards from boat and water operations and shoreline assessment and cleanup operations. The site safety plan covers training, equipment safety, protective clothing and equipment, decontamination, and first aid and medical evacuation procedures to be used during the response.

Specific safety considerations for SCAT operations include the following.

- Follow the Site Safety Plan.
- Attend daily safety meetings regarding SCAT work.
- Wear personal protective equipment.
- Some of the released product may be difficult to detect visually. Carefully inspect shorelines before leaving vessels; when on shorelines work as a team that includes the CTEH air monitor so long as conditions warrant.
- Teams will include an individual whose sole purpose is to monitor air quality so long as conditions require.
- Use personal flotation devices when transiting across water and review safe boating practices
- Watch for slips, trips, and falls.
- Wear hearing protection when designated.
- Watch for heat stress.
- Avoid interaction with wildlife.
- Protect hands.
- Operate equipment according to instructions.

Commented [NB7]: Update the safety section of the SCAT 204 in the IAP to reflect this by reference; clarify any use of limits and needs for additional safety equipment in excess of level D. I believe this has been discussed by the SOSC at planning meetings.

- Practice good housekeeping in work areas.

Of specific concern is nuisance product on shoes, clothes, and the potential for cross contamination. To prevent this, when teams are on shorelines they should don booties and gloves (which are available at the staging areas); full Tyvek coveralls are optional. Protective clothing should be removed as teams exit visibly affected areas and disposed of at waste receptacles (available at staging areas). If shoes or clothing does become contaminated, there are decontamination stations at the staging areas.

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3. SPECIAL CONSIDERATIONS AND WILDLIFE

Sensitive environmental and cultural resources identified in the area of potential impact (see Common Operating Picture) include shorebird foraging and loafing areas (e.g., mudflats) and recreational resources (e.g., San Jacinto Battleground State Historic Site and Baytown Nature Center).

Representatives of TCEQ (or an alternative agency approved by TCEQ[1]) and EPA (or designated representative) (if available) will accompany SCAT teams to identify the environmentally sensitive resources in the field and recommend appropriate actions. Should any nesting or other sensitive areas be encountered, they will be marked with flagging material, and shall be avoided.

- Activities that flush birds from the waterbird colony on Goat Island will be avoided.

Teams will document the presence or absence of dead or moribund marine mammals, turtles, birds, and other wildlife. If a team encounters moribund wildlife such that capture by a wildlife recovery team maybe possible, they will contact the wildlife operations hotline with locational information. No wildlife will be captured/recovered by SCAT teams.

4. ORGANIZATION, STAFFING, AND SCHEDULE

a. Organization

The SCAT Coordinator is in charge of the SCAT operations. The SCAT Coordinator reports directly to the Environment Unit Leader, but must maintain a close working relationship with the Operations Section, resource agencies, and other stakeholders. In the field, SCAT teams will receive priorities and technical directions from the SCAT Coordinator.

b. Staffing

Nominally, The field SCAT teams will consist of up to 6 members (plus vessel operators as needed), ideally with the following representation, (one or more roles may be combined):

- Federal On-Scene Coordinator (FOSC) representative
- State On-Scene Coordinator (SOSC) representative

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Commented [NB9]: What will be the requesting period for team identification? This would be helpful in the logistics of personnel availability. Also, an anticipated duration minimum (2 weeks/daily/4 teams….)

Commented [NB10]: SOSC/State stakeholder agency representative (as available)

[1] Texas Parks and Wildlife has been designated for all Texas Parks and Wildlife owned property (i.e. the state park and the battleship).

- Responsible Party (RP) representative
- Land owner/manager (as appropriate)

Boat-based SCAT teams will be assembled and deployed for SCAT surveys. The number of teams will be determined at the outset of the SCAT process and may be modified as needed during the response.

Field SCAT Team participants will be selected from representatives for the RP, federal agencies, state agencies, and/or landowners to provide the primary expertise described above. A SCAT Field Team Leader will be assigned for each team. There is a potential that a relatively clear product may have been released into the environment. As conditions warrant, teams may be supplement with resources that can readily detect clear product on shorelines (oil detection dogs, air quality meters, or other technology).

Commented [NB11]: Reminder to update throughout. While the compounds were product pre-event, released mixture is a waste and no longer a 'product'.

The SCAT Data Manager is responsible for the maintenance of the SCAT database and for the production of maps and tables as needed. The SCAT Data Manager may request the assignment of a SCAT Documentation specialist if the workload demands it.

A listing of the current organization (command & field) is outlined below.

Command Post

- **SCAT Coordinator – Lori Stone or Jeff Wakefield**
- **SCAT Data Manager – Peter Marsey or Kevin Gable**
    - **SCAT Documentation - TRG**

Boat-based Team Composition

- **Federal – EPA, USCG or designee**
- **State – TCEQ or designee**
- **RP – Cardno, on behalf of ITC**
- **Air Monitor – CTEH**
- **Boat Captain**

Commented [NB12]: As available

Efforts will be made to minimize personnel substitutions and select team members who can stay with the SCAT operations, or to have a systematic schedule of alternates; people who see conditions change through time have a better frame of reference for assessing the success of cleanup operations.

Team Priority – Areas of specific ecological, socioeconomic and/or cultural importance will be prioritized to maximize recovery opportunities and to reduce overall impacts.

c. Schedule

Teams will be assigned specific survey locations as outlined on a daily basis in applicable ICS-204 forms. Daily surveys will be prioritized based on observations made during aerial

reconnaissance flights and or RAT surveys. Areas where heavy affects have been noted will be prioritized to maximize recovery opportunities as will sensitive areas identified on the ICS-232 form. Surveys will be completed during daylight hours. Personnel may be relocated to address changing conditions.

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Field team members will be "calibrated" by having them visit shorelines of differing morphology to review the agreed-upon shoreline descriptors and to confirm how visible impacts will be described throughout the response process. Currently deployed RAT Teams have been calibrated.

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5. SCAT SURVEY METHODS

Shoreline surveys will be conducted for this incident by different methods and at different scales depending upon the size of the affected area, character of the shoreline type, and level of detail that is required. The following table presents a summary of the survey methods that may be used for this incident, key objectives of the survey methods, and the purpose of each survey method.

Table 1. Summary of SCAT Survey Methods		
Survey Method	**Key Objectives**	**Purpose**
Systematic Ground or Boat Survey	Systematically document product on shorelines.	Systematically document shoreline/product conditions in all segments within the affected area; complete shoreline oiling summary (SOS) forms (Appendix A), generate sketch maps for each oiled segment and complete Shoreline Treatment Recommendations (STRs) as outlined in appendices.
Access Constrained	Systematically document product on shoreline .	Within the area of potential impact, access to many shorelines are constrained due to safety and/or because physical obstructions limit the value of a systematic ground or boat based survey. In these instances, as judged appropriate by the EU, drone or manned overflight observations may be relied upon rather than systematic ground or boat surveys. The purpose of reviewing these observations is to complete SOS forms, generate sketch maps for each affected segment and complete STRs.
Spot Survey	Systematically document product on shorelines for discrete locations that have isolated pockets of product.	Systematically document visible impacts for selected sub-segments within the affected area and to complete SOS forms, generate sketch maps for each affected segment and complete "STRs.
Inspection Survey	Evaluate effectiveness of treatment methods employed by Operations in meeting shoreline treatment standards.	Systematically document shoreline conditions after treatment and cleanup of segments within the affected area against the applicable treatment standards, complete shoreline oiling summary forms, and generate sketch maps for those segments. Make recommendations for closure or further cleanup actions and complete Shoreline Inspection Reports (SIRs) for each segment, including those for which "No Future Treatment" is being recommended.

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a. Shoreline Segmentation Strategy

This plan currently addresses Division B. As conditions warrant, the geographic scope can be adjusted. Division B shorelines have been divided into segments based on 5 general Environmental Sensitivity Index (ESI) habitat categories (Figure 1):

1. Solid manmade Structures (ESI categories 1B and 8B)
2. Riprap (ESI categories 6B, and 8C)
3. Vegetated shoreline (ESI category 8f);
4. Bayous and marshes (ESI category 10a); and
5. Sand/gravel beaches (ESI category 5)

Actual SCAT segments will be established in the field based on habitats.

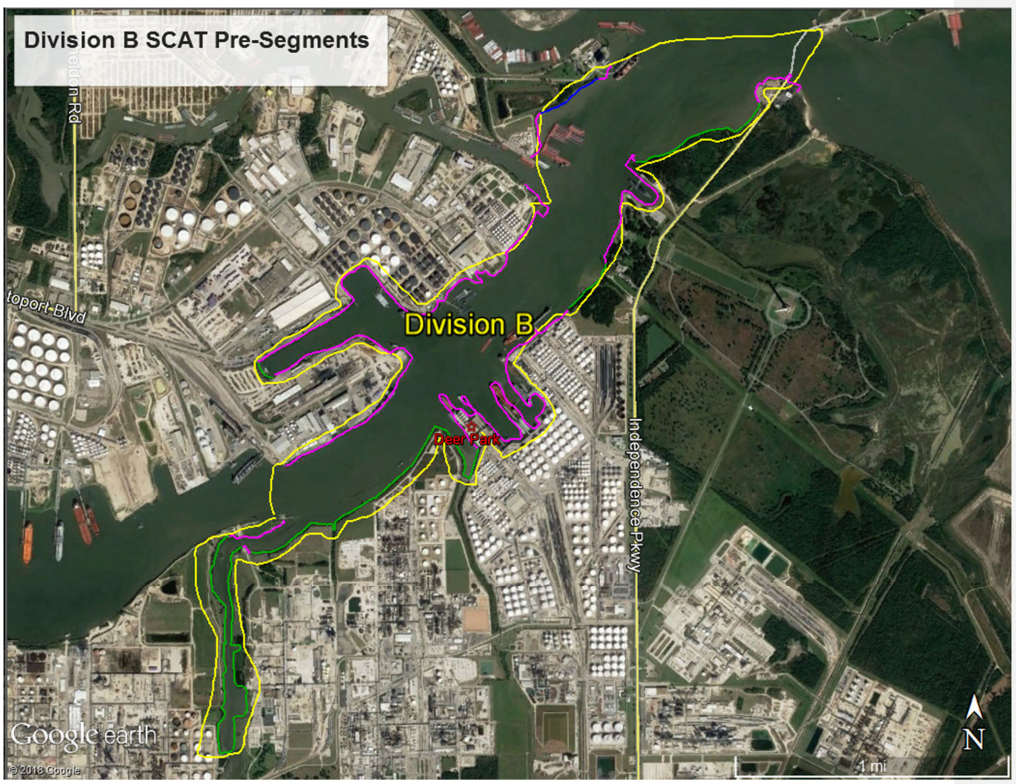

Figure 1. Division B SCAT Pre-Segments
yellow = Division B boundary; green = marsh/mudflat; pink = man-made/rip-rap; blue = beach.

6. FIELD DOCUMENTATION

Field documentation will consist, where possible, exclusively of standardized forms. Examples include the SOS and STR forms found in Appendices A and B, respectively.

The SCAT Coordinator and each Field Team Leader is responsible for ensuring that the following tasks and field documentation are completed.

- Complete SOS Form
- Complete STR Form
- Sketch(es) of the segment if product is observed
- Collect GPS coordinates of segment start and endpoints and specific features
- Collect digital photographs and log date/time/location if product is observed
- Dig pits/trenches if visible evidence suggests product may have penetrated soils

SCAT forms appropriate to the spill conditions (inland, tarball, winter, etc.) will be selected.

The completed field documentation (all of which are signed by all team member) (SOSs, STRs, sketches and photos) from the survey teams are to be provided to the Data Manger by the Team Leader. This documentation will be inspected at the command post for QA/QC on the same day as the survey to ensure that any necessary revisions are made prior to the surveys of the next day.

All GPS units and digital cameras will be provided to the SCAT Data Manager who will ensure that device times are synchronized, the correct datum is being used, and that all waypoints, tracklogs, and digital pictures are captured from each device prior to being redeployed with Field Teams.

In order to facilitate planning, the Field Team Leader will notify the SCAT Coordinator on a daily basis if any segments are identified that will require Operations mobilization.

7. DATA MANAGEMENT AND RESULTS

Data from SCAT field surveys is used to plan cleanup activities for the subsequent shoreline cleanup operations.

The SCAT Data Manager will log incoming SCAT field forms, sketches, and other information (films, videotapes, etc.) and review the field information. The review involves a QA/QC check to make sure that all sections of the forms have been completed and that the information is legible and appears reasonable and consistent. Any questions regarding missing information or apparent inconsistencies will be discussed with the Field Team Leaders before the next field assignment. After the control/QC review is complete, forms will be copied and distributed as needed and key information will be transferred to electronic summary tables as warranted. Forms, track logs, and photos will be posted to Diver as soon as is reasonable.

a. Data Outputs

In general, the types of data, graphics, and tables that will be generated from the SCAT database may include:

- Maps of shoreline segments and soil/sediment types
- SCAT visible oiling conditions (e.g., cover, thickness, and character) and changes over time
- SCAT field survey status
- Treatment recommendations
- Cleanup treatment status
- Lengths of affected shoreline (by oiling category and/or shoreline type)
- Lengths treated (by oiling category and/or treatment method)
- Area surveyed

Commented [NB14]: Repeat of comment – chemical/oily mixture; this is not solely an oil. Amend the form in appendix A and/or clarify that the form is the standard form used for oil SCAT activities and though used for this event, the assessment is for a chemical/oily mixture.

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b. Record Keeping

Original SCAT field forms, sketches, and other information (photos, videotapes, etc.) and data, graphics, and tables generated during the incident will be provided by the SCAT Data Manager to the Documentation Section for retention. Only copies of these records will be distributed for use by stakeholders (i.e. RP, USCG, state agencies, etc.).

8. CLEANUP ENDPOINTS AND STANDARDS

Spill cleanup endpoints and standards are described in Appendices B and C. These are endpoints for the cleanup of visible product.

9. INSPECTION AND SIGN-OFF

The purpose of inspection and sign off process is to determine if cleanup endpoints have been met and to provide recommendations to the UC regarding the need for additional active cleanup, passive cleanup, and/or monitoring, or to identify conditions that render further cleanup operations potentially detrimental to worker safety and/or the environment.

Sign-off will be based on field observations and best available data that exists on the date the sign-off is executed. Sign-off does not preclude a member of the UC from requiring the RP to conduct additional cleanup activities pursuant to any applicable laws, or in the event that additional visable affects are discovered.

Commented [SB15]: EPA & TCEQ need to decide whether any confirmation sampling will be required.

Shoreline signoff inspections will be completed following a three-step process. First, Sign-off Inspections will be conducted by a SCAT team consisting of Federal (EPA, USCG, or designee), State (TCEQ or designee), and RP representatives of the UC. If the inspection team is satisfied that the cleanup endpoints have been met, Federal, State, and RP representatives will sign off on the segment. Second, property owners will be provided the results of sign-off inspections for

review. The inspection process is documented on the SIR Form (Appendix C). The SIR Form documents a summary of the Initial/Historic Oiling Conditions within the segment, the Treatment Method, and the Treatment Endpoint Criteria, as approved by the UC. The final step will include UC review of a consolidated package of all signed-off segment SIR forms. Once UC agrees with the results of Sign-off Inspections, they will then sign off on the consolidated package.

The SCAT signoff process is intended to be a consensus-based team assessment. If, however, the team members are not in agreement regarding whether or not the endpoint criteria are met, then a sheet listing the reasons for disagreement will be attached to the SIR and forwarded to the UC for resolution.

a. Inspections for No Further Treatment

Each inspection team will consist of representatives of the FOSC, SOSC and the RP.

The SCAT Team Leader is designated as the team scribe. This person is responsible for recording all pertinent information in the field and returning completed forms (including attached photos and GPS units) to the SCAT Coordinator and SCAT Data Manager. All information entered into the forms must be neatly printed in ink. Sign-off inspections shall be conducted by visually inspecting the shoreline to determine if cleanup efforts conducted to date have been successful in achieving the cleanup endpoint. The purpose is to reach consensus with respect to one of five possible inspection outcomes:

1. Segment MEETS endpoint criteria – No further treatment
2. Segment DOES NOT MEET endpoint criteria – no further treatment feasible
3. Segment DOES NOT MEET endpoint criteria – no further treatment recommended due to Net Environmental Benefit (NEB)
4. Segment DOES NOT MEET endpoint criteria – additional monitoring recommended
5. Segment DOES NOT MEET endpoint criteria – additional active or passive cleanup recommended

Segment MEETS Endpoint Criteria

If an entire segment meets the endpoint criteria, the inspection team will recommend no further treatment on the SIR Form (Appendix C). This form will be returned to the Environmental Unit Lead.

Segment DOES NOT MEET Endpoint Criteria, No Further Treatment Feasible

For certain areas, teams may determine that additional work is not feasible at the present time, even though the cleanup endpoints have not been met, for example due to safety or access constraints, or due to a recommendation of the fouling being As Low As Reasonably Practicable (ALARP) In this instance, the team will provide rationale for their recommendation in the space provided on the SIR Form the rationale must be presented with sufficient detail to provide the UC with a basis for making a decision.

Photo-documentation will be provided for areas where the team believes no further work is feasible according to the instructions provided above.

Segment DOES NOT MEET Endpoint Criteria, No Further Treatment Recommended due to Net Environmental Benefit (NEB).

For certain areas, teams may determine that available treatment options may cause more damage than the stranded product, and therefore that further treatment may cause a negative Net Environmental Benefit (NEB). In this instance, the team will provide rationale for their recommendation in the space provided on the SIR Form the rationale must be presented with sufficient detail to provide the UC with a basis for making a decision.

Photo-documentation will be provided for areas where the team believes no further work is recommended due to NEB according to the instructions provided above.

Segment DOES NOT MEET Endpoint Criteria, Additional Monitoring Recommended

Sign-off teams may recommend that additional monitoring be performed if the cleanup endpoints have not been met or no additional active treatment is considered feasible. Details of the monitoring will be provided, including locations and frequency. The team will provide rationale for the recommendation and provide information about the duration of monitoring and monitoring endpoints until endpoint is attained or alternative treatment recommendation is developed. Keep in mind that monitoring may not be necessary for every segment.

Segment DOES NOT MEET Endpoint Criteria, Further Active or Passive Treatment Recommended

Portions of a segment that **meet** the approved cleanup endpoints do not require documentation. Portions of a segment that **do not meet** the approved cleanup endpoints require documentation. Teams must first determine whether additional action is recommended. If additional action is recommended, the proposed work will be described under the Endpoint Assessment section of the SIR Form. Recommendations will apply to discrete locations along the shoreline and must be recorded separately and distinguished by Item Number.

For each Item Number, a brief narrative description of the work that is recommended will be provided. Recommendations must be specific and contain sufficient detail to guide field operations. The team will indicate whether the recommended action entails additional active cleanup (e.g., manual removal) or passive actions (e.g., booming).

Field Mark-Out*: Areas recommended for additional work must be delineated in the field to enable future ide*ntification by Operations personnel. GPS coordinates will be recorded for the work location on the form in decimal degrees format (DD.ddddd), NAD83 state plain datum.

Photo-Documentation: Areas recommended for additional work must be photo-documented using a digital camera. Photos should depict the condition requiring additional work (e.g., product on rocks, tar mat on beach, etc.). If the area is too large to fit in a single picture, then a

representative area may be photographed; the entire area need not be photographed. Compose photos to show the field mark-out or other identifiable landmark, such that the photo could be used to confirm the location later. Record the file name/photo number for each photograph on the inspection form. This information should be taken from the camera at the time the photo is taken. Photos should be geo-referenced and annotated such that key information (time, date, location, and coordinates) appears on the photo. Digital photos must then be transferred onto a photo template, printed in color and attached to the corresponding SIR. Forms will be considered incomplete if printed photos are not attached.

b. Landowners review

Segments that meet endpoint criteria and receive Federal, State and RP signatures as completed may be presented to landowners for review.

SCAT Work Plan Appendix A –

SHORELINE OILING SUMMARY FORM

Commented [NB16]: Repeat comment – not solely an oil, it is a chemical/oily mixture

SHORELINE OIL SUMMARY (SOS) FORM:_____**Spill** **Page**____**of** _____

1. GENERAL INFORMATION	Date (dd/Month/yyyy) (please use month name)	Time (24h standard/daylight) (00:00 to 00:00)	Tide Height L / M / H Rising / Falling
Segment ID:			
Segment Name:		___:___to____:____	

Survey By: Foot /ATV/ Boat / Helicopter / Overlook / Other _____ | Weather: Sun / Clouds / Fog / Rain / Snow / Windy / Calm

2. SURVEY TEAM	Name & Organization	Initial	Name & Organization	Initial
Team Number				

3. SEGMENT	Total Length: m	Length Surveyed: m	Datum: WGS84
Survey Start GPS:	WP:	LAT: .	LONG: .
Survey End GPS:	WP:	LAT: .	LONG: .

4a. BACKSHORE CHARACTER: Indicate only ONE Primary type and ALL Secondary types

Cliff/Slope___Lowland____Beach_____Dune____Wetland____Lagoon____Delta____Channel____Man-Made_____:_____

4b. ESI SHORELINE TYPE: Indicate only ONE Primary (P) and ANY Secondary (S) types. CIRCLE those oiled.

Primary: | Secondary:

5. OPERATIONAL FEATURES	Oiled Debris? Yes / No	Type:	Amount: (bags)
Direct backshore access? Yes / No	Alongshore access from next segment? Yes / No	Suitable for backshore staging? Yes / No	

Access Description / Restrictions:

6. OILING DESCRIPTION: Indicate overlapping zones in different tidal zones by numbering them (e.g. A1, A2)

Zone ID	ESI Type	WP Start	WP End	Tidal Zone				Oil Cover						Oil Thickness					Oil Character							
								Area		Distribution		Size														
				LI	MI	UI	SU	Length (m)	Width (m)	Distr. % >1	# per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP	No

7. SUBSURFACE OILING CONDITIONS: Format: Zone ID dash Trench Number in that Zone, e.g., "A-1, B-1, B-2"

Pit #	WP	Substrate Type Surface / Subsurface	Tidal Zone				Pit Depth (cm)	Oiled Interval (cm-cm)	Subsurface Oil Character										Water Table (cm)	Sheen Color B,R,S,N	Clean Below Yes / No
			LI	MI	UI	SU			OP	PP	OR	OF	TR	TB	SR	AP	NO	%			

8. COMMENTS: Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations; Oiling Descriptions

Sketch: Yes / No Photos: Yes / No Photo Numbers: (-) Photographer Name:

SHORELINE OILING SUMMARY FORM EXPLANATIONS

Calibration: Do a calibration exercise to make sure that all teams are consistently using the same terminology and estimations.

Units: Use either metric (m, cm) or English (yd, ft, in). Circle the units used.

Tide Height: Circle the two letters indicating the progression of the tidal stage during the survey, either rising or falling.

Segment/Survey Length: Always record both segment and survey lengths on the first survey, especially where the SCAT team creates the segments in the field. On repeat surveys, always enter in the Survey Length, especially if only part of the segment is surveyed.

Start/End GPS: The preferred format for latitude and longitude is decimal degrees, but be consistent among teams. Record the datum if different from NAD 83 state plain datum.

SURFACE OILING CONDITIONS

Zone ID: Use a different ID for each oil occurrence, e.g., two distinct bands of oil at mid-tide and high-tide levels, or alongshore where the oil distribution changes from 10 % to 50%. Describe each oil occurrence on a separate line. Record the shoreline type(s) present in each oiled zone using the terminology in section 4 or the ESI code.

Tidal Zone: Use the codes to indicate the location of the oil being described, as in the lower (LI), mid (MI), or upper (UI) intertidal zone, or in the supra (SU) tidal zone (above the normal high tide level).

Distribution: Enter the estimated percent of oil on the surface (preferred), or codes for the following intervals:

C	Continuous	91-100% cover
B	Broken	51-90%
P	Patchy	11-50%
S	Sporadic	<1-10%
T	Trace	<1%

Surface Oiling Descriptors - Thickness: Use the following codes: TO Thick Oil (fresh oil or mousse > 1 cm thick)

- CV Cover (oil or mousse from >0.1 cm to <1 cm on any surface)
- CT Coat (visible oil <0.1 cm, which can be scraped off with fingernail)
- ST Stain (visible oil, which cannot be scraped off with fingernail)
- FL Film (transparent or iridescent sheen or oily film)

Surface Oiling Descriptors - Type

- FR Fresh Oil (unweathered, liquid oil)
- MS Mousse (emulsified oil occurring over broad areas)
- TB Tar balls (discrete accumulations of oil <10 cm in diameter)
- PT Patties (discrete accumulations of oil >10 cm in diameter)
- TC Tar (highly weathered oil, of tarry, nearly solid consistency)
- SR Surface Oil Residue (non-cohesive, oiled surface sediments)
- AP Asphalt Pavements (cohesive, heavily oiled surface sediments)
- No oil (no evidence of any type of oil)

SUBSURFACE OILING CONDITIONS

Oiled Interval: Measure the depths from the sediment surface to top/bottom of subsurface oiled layer. Enter multiple oil layers on separate lines.

Subsurface Oiling Descriptors: Use the following codes:

- OP Oil-Filled Pores (pore spaces are completely filled with oil)
- PP Partially Filled Pores (the oil does not flow out of the sediments when disturbed)
- OR Oil Residue (sediments are visibly oiled with black/brown coat or cover on the clasts, but little or no accumulation of oil within the pore spaces)
- OF Oil Film (sediments are lightly oiled with an oil film, or stain on the clasts) TR Trace (discontinuous film or spots of oil, or an odor or tackiness)

Sheen Color: Describe sheen on the water table as brown (B), rainbow (R), silver (S), or none (N).

SCAT Work Plan Appendix B –

Shoreline Treatment Recommendations and Visible Oiling Cleanup Endpoints: Outside San Jacinto State Park

This appendix describes cleanup tradeoffs and cleanup endpoints for each shoreline habitat type affected by the 2nd 80's tank area fire and outside San Jacinto Park. If additional shoreline types are affected by the release, the plan may be amended as judged appropriate by the environmental unit leader. These treatment recommendations are general Shoreline Treatment Recommendations (STRs) for the different shoreline types identified in the potentially affected area. Site-specific STRs may be produced for some segments or areas, e.g. San Jacinto State Park and Battleship.

Solid Manmade Structures (Seawalls, Pier Pilings, Bulkheads)

Cleanup Trade-off Issues

- Solid manmade structures occur in developed areas with chronic sources of pollutants or habitat degradation nearby.
- More intrusive techniques are considered because of the limited habitat value and a desire to minimize human exposure in high public use and populated areas.
- Complete removal of oil may not be possible as structures maybe inaccessible and/or may pose human health and safety issues to response crews.
- If residues remain, structures can release sheens.

Cleanup Endpoints for Visible Oil

- For structures whose primary purpose is to support industrial activity: does not release oil greater than a sheen, oil on exposed surfaces does not rub off easily, and any remaining oil does not impede industrial operations. No readily accessible oiled debris (unoiled debris should not be removed).
- In high public use areas, no greater than Stain (cannot be scraped off with a fingernail) at 20% distribution. No readily accessible oiled debris (unoiled debris should not be removed) and does not release oil greater than a sheen.
- Some pilings maybe inaccessible and/or work in specific areas may pose human health and safety issues. In these instances, less aggressive endpoints will be evaluated on a site-specific basis.

Commented [SB17]: Or rubbed off during incidental contact.

Treatment Recommendations

- Natural attenuation (where oiling conditions meet endpoints)
- Washing / flushing with low-pressure, ambient water
  - Containment boom and sorbents will be deployed to contain and recover released oil;

- High-pressure and/or hot-water washing may be permitted on segments with high public use with prior EU approval
- The use of Surface Washing Agents is not permitted without approval of the Unified Command.

Commented [SB18]: May be needed on structures such as industry dock pilings?

Manual removal by scraping or wiping with sorbents.

- Manual removal of oiled debris.
- Deployment of sorbents to passively recover oil released by natural processes.

Riprap

Cleanup Trade-off Issues

- Riprap occurs in developed areas with chronic sources of pollutants or habitat degradation nearby.
- Techniques that are more intrusive are considered because of the limited habitat value and a desire to minimize human exposure in high public use and populated areas.
- Complete removal of oil may not be possible as interior surfaces maybe inaccessible and/or access can be unsafe.
- If residues remain, riprap can release sheens.

Cleanup Endpoints for Visible Oil

- For riprap whose primary purpose is to support industrial activity: does not release oil greater than a sheen, oil on exposed surfaces does not rub off easily, and any remaining oil does not impede industrial operations. No readily accessible oiled debris (unoiled debris should not be removed).
- In high public use areas, no greater than Stain (cannot be scraped off with a fingernail) at 10% distribution and no greater than Coat at 10% distribution in readily accessible crevices. No readily accessible oiled debris (unoiled debris should not be removed) and does not release oil greater than a sheen.
- Some structures maybe inaccessible and/or work in specific areas may pose human health and safety issues. In these instances, less aggressive endpoints will be evaluated on a site-specific basis.

Commented [SB19]: Do we need to include air monitoring verification of vapor concerns?

Treatment Recommendations

- Natural attenuation (where oiling conditions meet endpoints)
- Washing / flushing with low-pressure, ambient water
  - Containment boom and sorbents will be deployed to contain and recover released oil;

- For application on small objects, sorbents can be placed around and below the object for oil recovery to prevent oiling of the surrounding area
- High-pressure and/or hot-water washing may be permitted on segments with high public use with prior EU approval
- The use of Surface Washing Agents is not permitted without approval of the Unified Command.

- Manual removal by scraping or wiping with sorbents.
- Manual removal of oiled debris.
- Deployment of sorbents to recover oil released by natural processes.

Vegetated Shorelines

Cleanup Trade-offs

- Natural removal rates may be slow.
- General efforts focus on recovery of free oil on the shoreline and deployment of sorbents to recover sheens. Aggressive cleanup can affect vegetation and slow overall recovery.
- Foot traffic on the vegetation should be minimized; use boardwalks, work from boats, or restrict work to vegetation edges.
- Oil on vegetation generally weathers to a dry coat within weeks, after which there is a lower threat of oiling wildlife using the marsh.

Commented [SB20]: Will this spilled material kill vegetation anyway?

Cleanup Endpoints *for Visible Oil*

- No oil on vegetation that can rub off on contact and affect sensitive areas, wildlife, or human health.
- No free-floating oil unless removal will adversely affect the habitat and/or pose a risk to human health.
- Remaining oil does not produce a sheen, which will affect sensitive area and wildlife.
- No readily accessible and/or mobile oiled debris; unoiled debris should not be removed.

Treatment Recommendations

- Natural attenuation.
- Passive use of sorbents at the water's edge to recover mobilized oil.
- Manual removal of oiled debris that is readily accessed from outside the vegetated area.
- Low-pressure washing may be used while preventing any impacts to shoreline substrate (no trampling). The spray will direct the oil to open water where it will be collected.

- Washing may need to be conducted from a boat to avoid trampling.
- Washing in Division B requires pre-approval by safety to ensure activities will not pose a threat to human health and safety.

- Deployment of sorbents at habitat edges to passively recover oil released by natural processes.

Utilization of other treatments will require a site-specific Shoreline Treatment Recommendation.

Bayous and Marshes

Cleanup Trade-off Issues

- Natural removal rates are very slow. Thick oil on vegetation is usually removed only when the vegetation dies back and sloughs off.
- General efforts focus on recovery of free oil trapped in the marsh and deployment of sorbents to recover sheens. Most types of active cleanup in the marsh can cause significant habitat impact and slow overall recovery.
- Foot traffic on the vegetation should be minimized; use boardwalks, work from boats, or restrict work to the marsh edge.
- Oil on marsh vegetation generally weathers to a dry coat within weeks, after which it is a lower threat of oiling wildlife using the marsh.

Cleanup Endpoints *for Visible Oil*

- No oil on vegetation that can rub off on contact and affect sensitive areas, wildlife, or human health.
- No free-floating oil unless removal will adversely affect the habitat and/or pose a risk to human health.
- Remaining oil does not produce a sheen that will affect sensitive areas or wildlife.
- No readily accessible or mobile oiled debris; unoiled debris should not be removed.

Treatment Recommendations

- Natural attenuation.
- Deployment of sorbents along habitat edges to passively recover oil released by natural processes.
- Passive use of sorbents at the water's edge to recover mobilized oil.
- Low-pressure washing may be used while preventing any impacts to marsh substrate (no trampling). The spray will direct the oil to open water where it will be collected.
  - Washing may need to be conducted from a boat to avoid trampling.
  - Washing in Division B requires pre-approval by safety to ensure activities will not pose a threat to human health and safety.

- If entry into marsh is unavoidable, wooden planks should be put down to avoid walking in the marsh.
- Utilization of other treatments will require a site-specific Shoreline Treatment Recommendation.

<u>Sand/Gravel Beaches</u>

Cleanup Trade-offs

- Amenity beaches often require a quick cleanup and high degree of cleanliness.
- Oil on the surface of sand beaches is relatively easy to clean; however, difficulties arise when the oil is buried because of the amount of sediment that must be removed.

Cleanup Endpoints *for Visible Oil*

    - No readily accessible and/or mobile oiled debris; unoiled debris should not be removed.
    - Unless doing so results in a net-negative effect, tarballs should be cleaned up to reach background frequency, to be determined on a beach-by-beach basis.
- Remaining oiled does not produces a sheen that will affect sensitive areas or wildlife.
- On beaches with high resource value, less stringent endpoints can be used to minimize overall impacts.

Treatment Recommendations

- Natural attenuation
- Manual removal of oil and oiled sediment.
- Manual removal of oiled debris.

In all cases, if, for reasons such as human health and safety and background conditions, and/or if additional cleanup would cause more harm than good, endpoint criteria may be re-evaluated on a segment-specific basis.

SCAT Work Plan Appendix C –

Shoreline Treatment Recommendations and Visible Oiling Cleanup Endpoints: San Jacinto State Park

This appendix describes cleanup tradeoffs and cleanup endpoints for each shoreline habitat type within the San Jacinto State Park and Battleship affected by the 2nd 80's tank area fire. This is the first phase of cleanup based on visual observation. Additional phases may also be necessary.

- No pitting/trenching shall be undertaken at the State Park without prior approval from the EU, State Park and SHPO.
- Coordinate with State Parks for access from the Park and to assign a Cultural Resources specialist to teams working in the Park.
- This plan does not address cleanup of the Battleship. Cleanup methods for the Battleship will be addressed in a separate plan.

Solid Manmade Structures (Seawalls, Pier Pilings, Bulkheads)

Cleanup Trade-off Issues

- Solid manmade structures often occur in developed areas with chronic sources of pollutants or habitat degradation nearby.
- Techniques that are more intrusive are considered because of the limited habitat value and a desire to minimize human exposure in high public use and populated areas.
- Complete removal of oil may not be possible as structures maybe inaccessible and/or may pose human health and safety issues to response crews.
- If residues remain, structures can release sheens.

Cleanup Endpoints for Visible Oil

- For structures whose primary purpose is to support industrial activity: does not release oil greater than a sheen, oil on exposed surfaces does not rub off easily, and any remaining oil does not impede industrial operations. No readily accessible oiled debris (unoiled debris should not be removed).
- In high public use areas, no greater than Stain (cannot be scraped off with a fingernail) at 10% distribution and no greater than Coat at 10% distribution in crevices. No readily accessible oiled debris (unoiled debris should not be removed) and does not release oil greater than a sheen.
- Some structures maybe inaccessible and/or work in specific areas may pose human health and safety issues. In these instances, less aggressive endpoints will be evaluated on a site-specific basis.

Treatment Recommendations

- Natural Recovery
- Washing / flushing with low pressure, ambient water
    - Containment boom and sorbents will be deployed to contain and recover released oil;
    - For application on small objects, sorbents can be placed around and below the object for oil recovery to prevent oiling of the surrounding area
    - High pressure and/or hot water washing may be permitted on segments with high public use with prior EU approval
    - The use of Surface Washing Agents is not permitted without approval of the Unified Command.
- Manual removal by scraping or wiping with sorbents.
- Manual removal of oiled debris.
- Deployment of sorbents to passively recover oil released by natural processes.

Riprap

Cleanup Trade-off Issues

- Riprap often occurs in developed areas with chronic sources of pollutants or habitat degradation nearby.
- Techniques that are more intrusive are considered because of the limited habitat value and a desire to minimize human exposure in high public use and populated areas.
- Complete removal of oil may not be possible as interior surfaces maybe inaccessible and/or access can be unsafe.
- If residues remain, riprap can release sheens.

Cleanup Endpoints for Visible Oil

- For riprap whose primary purpose is to support industrial activity: does not release oil greater than a sheen, oil on exposed surfaces does not rub off easily, and any remaining oil does not impede industrial operations. No readily accessible oiled debris (unoiled debris should not be removed).
- In high public use areas, no greater than Stain (cannot be scraped off with a fingernail) at 10% distribution and no greater than Coat at 10% distribution in readily accessible crevices. No readily accessible oiled debris (unoiled debris should not be removed) and does not release oil greater than a sheen.
- Some structures maybe inaccessible and/or work in specific areas may pose human health and safety issues. In these instances, less aggressive endpoints will be evaluated on a site-specific basis.

Treatment Recommendations

- Natural Recovery
- Washing / flushing with low pressure, ambient water
    - Containment boom and sorbents will be deployed to contain and recover released oil;
    - For application on small objects, sorbents can be placed around and below the object for oil recovery to prevent oiling of the surrounding area
    - High pressure and/or hot water washing may be permitted on segments with high public use with prior EU approval
    - The use of Surface Washing Agents is not permitted without approval of the Unified Command.

- Manual removal by scraping or wiping with sorbents.
- Manual removal of oiled debris.
- Deployment of sorbents to recover oil released by natural processes.

<u>Vegetated Shorelines</u>

Cleanup Trade-offs

- Natural removal rates may be slow.
- General efforts focus on recovery of free oil on the shoreline and deployment of sorbents to recover sheens. Aggressive cleanup can affect vegetation and slow overall recovery.
- Foot traffic on the vegetation should be minimized; use boardwalks, work from boats, or restrict work to vegetation edges.
- Oil on vegetation generally weathers to a dry coat within weeks, after which there is a lower threat of oiling wildlife using the marsh.

Cleanup Endpoints for Visible Oil

- No oil on vegetation that can rub off on contact and affect sensitive areas, wildlife, or human health.
- No free-floating oil unless removal will adversely affect the habitat and/or pose a risk to human health.
- Remaining oil does not produce a sheen, which will affect sensitive area and wildlife.
- No readily accessible and/or mobile oiled debris; unoiled debris should not be removed.

Treatment Recommendations

- Natural attenuation.
- Passive use of sorbents at the water's edge to recover mobilized oil
- Manual removal of oiled debris that is readily accessed from outside the vegetated area.
- Low pressure washing may be used while preventing any impacts to shoreline substrate (no trampling. The spray will direct the oil to open water where it will be collected.
    - Washing may need to be conducted from the boat to avoid trampling.
    - Washing in Division B requires pre-approval by safety to ensure activities will not pose a threat to human health and safety.
- Deployment of sorbents at habitat edges to passively recover oil released by natural processes.
- Utilization of other treatments will require a site-specific Shoreline Treatment Recommendation.

Bayous and Marshes

Cleanup Trade-off Issues

- Natural removal rates are very slow. Thick oil on vegetation is usually removed only when the vegetation dies back and sloughs off.
- General efforts focus on recovery of free oil trapped in the marsh and deployment of sorbents to recover sheens. Most types of active cleanup in the marsh can cause significant habitat impact and slow overall recovery.
- Foot traffic on the vegetation should be minimized; use boardwalks, work from boats, or restrict work to the marsh edge.
- Oil on marsh vegetation generally weathers to a dry coat within weeks, after which it is a lower threat of oiling wildlife using the marsh.

Cleanup Endpoints *for Visible Oil*

- No oil on vegetation that can rub off on contact and affect sensitive areas, wildlife, or human health.
- No free-floating oil unless removal will adversely affect the habitat and/or pose a risk to human health.
- Remaining oil does not produces a sheen that will affect sensitive areas or wildlife.
- No readily accessible or mobile oiled debris; unoiled debris should not be removed.

Treatment Recommendations

- Natural Attenuation.
- Deployment of sorbents along habitat edges to passively recover oil released by natural processes.
- Passive use of sorbents at the water's edge to recover mobilized oil.
- Low pressure washing may be used while preventing any impacts to marsh substrate (no trampling). The spray will direct the oil to open water where it will be collected.
    - Washing may need to be conducted from the boat to avoid trampling.
    - Washing in Division B requires pre-approval by safety to ensure activities will not pose a threat to human health and safety.
- If entry into marsh is unavoidable, wooden planks should be put down to avoid walking in the marsh.
- Utilization of other treatments will require a site-specific Shoreline Treatment Recommendation.

The marsh along the northern edge of the park adjacent to Buffalo Bayou and between the battleship berth and the ferry landing is on hard sand. This area can be more intensely cleaned.

The marsh along the Santa Ana Bayou is sensitive habitat.

<u>Sand/Gravel Beaches</u>

Cleanup Trade-offs

- Amenity beaches often require a quick cleanup and high degree of cleanliness.
- The sand beach cycle is usually short, so re-worked and re-located sediments often can be rapidly returned to their normal profile on exposed beaches. Wave action and/or scour can be an effective process for removing residual stains.
- Oil on the surface of sand beaches is relatively easy to clean; however, difficulties arise when the oil is buried because of the amount of sediment that must be removed.

Cleanup Endpoints for Visible Oil

- No readily accessible and/or mobile oiled debris; unoiled debris should not be removed.
- Unless doing so results in a net-negative effect, tarballs should be cleaned up to reach background frequency, to be determined on a beach-by-beach basis.
- Remaining oiled does not produce a sheen that will affect sensitive areas or

wildlife.

- On beaches with high resource value, less stringent endpoints can be used to minimize overall impacts.

Treatment Recommendations

- Natural Attenuation
- Manual removal of oil and oiled sediment.
- Manual removal of oiled debris.

In all cases, if, for reasons such as human health and safety and background conditions, and/or if additional cleanup would cause more harm than good, endpoint criteria may be re-evaluated on a segment-specific basis.

SCAT Work Plan Appendix D –

SEGEMENT INSPECTION REPORT FORM

Segment Inspection Report for: 2nd 80's Fire_____

Segment(s) ID: _____

Beginning Coordinates _____

Ending Coordinates _____

Survey Date:_____**Survey Time:** _____

Tides:_____**Weather:** _____

Inspection Completed Along Entire Segment: Yes / No

Result/Recommendation:

□ Segment Meets Endpoint Criteria.

□ Segment does NOT meet endpoint criteria; no further treatment feasible.

□ Segment does not meet endpoint criteria-no further treatment recommendation due to NEB.

□

□ Segment does NOT meet endpoint criteria; additional monitoring recommended.

□ Segment does NOT meet endpoint criteria; further active or passive treatment recommended.

(Provide written details of issues and required actions. Include coordinates or other delineating information)

□ Continued monitoring required.

(Provide written details of frequency and schedule.)

Sign-off Team Members:

Name	Signature
FOSC Rep	
SOSC Rep	
RP Rep	
Landowner/Stakeholder (If Appropriate)	