

GUIDELINES FOR MONITORING *IN-SITU* BURNS OF ON-SHORE OIL SPILLS

IMMEDIATELY PRIOR TO BURN

- Record average water depth over plant crowns (stem/root interface). Record water and substrate temperatures and water salinity.
- Record wind direction and speed, air temperature at the time of ignition and the minimum and maximum air temperatures for the day.
- Collect a composite sample of the effected substrate for oil contaminant characterization. Analysis should utilize the Total Petroleum Hydrocarbon method 8015 modified GC/FID.
- Record the length of time the oil has been in contact with the vegetated marsh to be burned.

POST BURN

- Provide scalable aerial photography of the effected site.
- Establish three sets of duplicate treatment transects for vegetative data collection: 1) unoiled, unburned (reference); 2) oiled, burned; and 3) if available, oiled, unburned. The transects should be approximately 50 meters in length with five sample points along each, depending on the size of the area to be monitored. Each sample point will be the center of a 1m² quadrat within which vegetative data will be collected.
- Total species-specific vegetative cover should be determined using the Braun-Blanquet Cover-Abundance Scale (Mueller-Dombois and Ellenberg, 1974).
- Stem density measurements should be conducted by counting all stems by species in 0.25 m² quadrats randomly placed around each sample point.
- Collect a composite sample of the effected substrate (oiled, burned area) for oil contaminant characterization. Analysis should utilize the Total Petroleum Hydrocarbon method 8015 modified GC/FID.

DURING THE FOLLOWING MID-GROWING SEASON

- Provide scalable aerial photography of the site.
- Total species-specific vegetative cover should be determined using the Braun-Blanquet Cover-Abundance Scale (Mueller-Dombois and Ellenberg, 1974).
- Stem density measurements should be conducted by counting all stems by species in 0.25 m² quadrats randomly placed around each sample point.
- Collect a composite sample of the effected substrate (oiled, burned area and oiled, unburned, if available) for oil contaminant characterization. Analysis should utilize the Total Petroleum Hydrocarbon method 8015 modified GC/FID.

- Determine biomass response within each treatment unit by clipping at ground level all vegetation within a 0.25 m² quadrat placed randomly around each sample point. Upon return from the field, separate all material from each quadrat by species and by live and dead components. Dry all material at 65° C to a constant weight and record dry mass.

DURING SECOND GROWING SEASON

- Provide scalable aerial photography of the site.
- Total and species-specific vegetative cover should be determined using the Braun-Blanquet Cover-Abundance Scale (Mueller-Dombois and Ellenberg, 1974).
- Stem density measurements should be conducted by counting all stems by species in 0.25 m² quadrats randomly placed around each sample point.
- Collect a composite sample of the effected substrate (oiled, burned area and oiled, unburned, if available) for oil contaminant characterization. Analysis should utilize the Total Petroleum Hydrocarbon method 8015 modified GC/FID.
- Determine biomass response within each treatment unit by clipping at ground level all vegetation within a 0.25 m² quadrat placed randomly around each sample point. Upon return from the field, separate all material from each quadrat by species and by live and dead components. Dry all material at 65° C to a constant weight and record dry mass.

REFERENCES

- Henry, C.B. 1996. Fate of spilled oil following application of *in-situ* burning as a spill mitigation technique at Louisiana Rockefeller Refuge: Chemistry results from year one monitoring study. Technical Report Number IES/RCAT96-23. Institute for Environmental Studies, Louisiana State University, Baton Rouge, Louisiana 48 pp.
- Hess, T.J., Jr., I. Bryron, H. Warner-Finley, and C.B. Henry. 1997. The Rockefeller Refuge Oil Spill: a team approach to incident response. Proceedings of the 1997 International Oil Spill Conference. p 817-821.
- Mueller-Dombois, D. And H. Ellenberg, 1974. Aims and Methods of Vegetation Ecology. John Wiley and Sons, New York, 547 pp.
- Pahl, J.W., I.A. Mendelssohn, and T.J. Hess. 1997. The application of *in-situ* burning to a Louisiana coastal marsh following a hydrocarbon product spill: preliminary assessment of site recovery. Proceedings of the 1997 International Oil Spill Conference. p 822-828.