PREPRODUCTION INITIATIVE-NELP
SWEEPERS AND SCRUBBERS (PIER CLEANING)
TEST PLAN

SITE: NS SAN DIEGO

1.0 OBJECTIVE

This test plan describes the procedure for gathering performance data on Tennant Model No. 830 sweepers and Model No. 550 scrubber. The sweepers and scrubber will be used as a best management practice (BMP) to reduce pollutants in stormwater runoff at NS San Diego's piers and other industrial sites. The data will be used to determine the unit's effectiveness, efficiency, and ability to interface with site operations.

2.0 BACKGROUND

The San Diego Regional Water Quality Control Board (RWQCB) is proposing to adopt provisions that will require a permit for storm water discharges from all Navy bases in the San Diego area. This permit will most likely contain conditions prohibiting the discharge of the first flush of storm water (runoff resulting from the first ¼ inch of precipitation) from high-risk areas that fail to meet toxicity standards. In general, a high-risk area is defined as an area that poses a higher risk to San Diego Bay because of the potential for site pollutants to commingle with storm water runoff and be discharged to the bay. To reduce the size and number of areas that may be considered high risk, NS San Diego is implementing a strict Storm Water Pollution Prevention Program (SWPPP) with effective BMPs to minimize pollutant loading in storm water discharges. An effective BMP that may allow NS San Diego to manage piers and other industrial sites as non-high risk areas is the use of mechanical sweepers and scrubbers. The sweepers and scrubbers have been proposed to minimize the amount of pollutants—such as oil, grease, sediment, abrasive blast material, and bird droppings—in stormwater runoff at NS San Diego.

3.0 TEST PLAN

3.1 Approach

Data will be collected for approximately three months and will be gathered, recorded, and reported according to this test plan. Two Tennant Company 830 Sweepers and one 550 Scrubber have been designated as the test units for this evaluation period. The following data will be collected:

- Fuel consumption
- Hours of operation
- Amount of disposed waste
- Cleaning detergent consumption
- Required repairs

- Required maintenance
- Qualitative evaluation

3.2 Test Procedures

The following data collection procedures specify how data is to be collected. For each unit, data should be collected and recorded daily and monthly.

3.2.1 Daily Operational Data Sheet

Complete the daily operational data sheet for each day a unit is operated and record data in the appropriate box for that day of the month.

3.2.1.1 Unit Identification

Check the appropriate box at the top of each daily operational sheet data sheet to identify the unit for which the data is being collected. The unit serial number can be found in the cab above the accelerator petal.

3.2.1.2 Fuel Consumption

Record the quantity of fuel added to each unit.

3.2.1.3 Hours of Operation

Record the total amount of time that a unit is in operation each day.

3.2.1.4 Number of Waste Disposals

Record the total number of times a unit's hopper is emptied during a day.

3.2.1.5 Amount of Debris Disposed

The units are equipped with debris collection hoppers that must be emptied periodically. They are also equipped with "full" indicators to notify the operator when the hoppers reach maximum capacity. If the hopper is emptied before it reaches maximum capacity, estimate whether it was ¼, ½, or ¾ full and circle the appropriate number on the daily operational data sheet. If the hopper is emptied after the "full" indicator light is activated, circle "full."

3.2.1.6 Detergent Consumption (Scrubber Only)

Record the total amount of detergent added to the scrubber fresh water solution tank.

3.2.2 Monthly Operational Data Sheet

The monthly data collection sheet should be completed at the end of each month.

3.2.2.1 Unit Identification

Check the appropriate box at the top of each monthly operational sheet data sheet to identify the unit for which the data is being collected. The unit serial number is located in the cab above the accelerator petal.

3.2.2.2 Repairs

Record any repair(s) completed during the month. Describe and record the required repair, cause, parts, cost, repair time, downtime, and preventive corrections.

3.2.2.3 Maintenance

Record any maintenance completed during the month. The Tennant Company has been employed to perform a variety of routine maintenance tasks on a monthly basis (see Table 3, Flat Rate Planned Maintenance). The Flat Rate Planned Maintenance by Tennant sheet should be completed by checking the appropriate box. Replacement of the sweeper and scrubber brushes is not included in the Tennant maintenance plan; therefore, the type and quantity of the replaced brush should be recorded by checking and filling out the appropriate boxes.

3.2.2.4 Qualitative Assessment

Any observations, comments, or suggestions pertaining to the overall performance of the units should be recorded.

3.3 Data Collection

Data collection shall be in accordance with the requirements of this test plan. Brian Gordon, Code N4512, will supervise data collection during the evaluation period.

4.0 REPORTING

The data entry forms are a concise method of data collection. The forms should be completed on a daily and monthly basis, as required. During this time, periodic status reports on the evaluation will be submitted to NAWCADLKE. The final report will include detailed results and observations, and assess the unit's efficiency, effectiveness, cost, and ability to interface with site operations. Any questions that arise during this test period should be directed to Marty Casey at 856-667-6770.

Table 1
Daily Operational Data Sheet
Month _____

Unit (Check One)

- ❑ Sweeper #1 (Serial #3613)
- ❑ Sweeper #2 (Serial #3721)
- ❑ Scrubber (Serial #6139)

1 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	2 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	3 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	4 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	5 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	6 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	7 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____
8 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	9 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	10 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	11 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	12 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	13 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	14 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____
15 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	16 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	17 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	18 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	19 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	20 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	21 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____
22 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	23 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	24 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	25 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	26 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	27 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	28 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____
29 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	30 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____	31 Fuel Added (gal)____ Hours Operated ____ # of Disposals _____ ¼ ½ ¾ full Detergent (gal) _____				

COMMENTS/OBSERVATIONS:

_____

_____

_____

***ATTENTION*: At the end of each month, complete Table 2, Monthly Operational Data Sheet, and fax with the month's *daily* data sheets to Brian Gordon at 619-524-6349.**

Table 2
Monthly Operational Data Sheet

Month _____

Unit (Check One) Date: _____

- ❑ Sweeper #1 (Serial #3613)
- ❑ Sweeper #2 (Serial #3721) Name: _____
- ❑ Scrubber (Serial #6139)

REPAIR

List any repair(s) required this month:

_____

_____

Describe the cause of the required repair(s):

_____

_____

List repair parts, cost (if known), and time required to complete the repair:

_____

_____

List the amount of downtime due to repair:

_____

_____

Detail corrections made to prevent future occurrences:

_____

_____

MAINTENANCE (Check if Yes)

- ❑ Tennant Company performed flat rate planned maintenance this month. (See attached copy of maintenance requirements)

Brushes replaced this month: (Check appropriate box(s))

- ❑ 51" main sweeping brush Quantity ____
- ❑ 32" right hand curb sweeping brush Quantity ____
- ❑ 32" left hand curb sweeping brush Quantity ____
- ❑ 38" arm sweeping brush Quantity ____
- ❑ 50" cylindrical scrubbing brush (*scrubber only*) Quantity ____

QUALITATIVE ASSESSMENT

Please comment on the overall performance of the unit this month:

_____

_____

Please comment on any problems encountered this month:

_____

_____

Please suggest any possible improvements:

_____

_____

Additional comments/observations:

_____

_____

_____

***ATTENTION*: At the end of each month, complete this form and fax with the month's *daily* data sheets to Brian Gordon at 619-524-6349.**

Table 3
Flat Rate
Planned Maintenance
Included Parts

TENNANT SWEEPERS

Flat Rate	
PM Parts	**Model No. 830**
Air Cleaner	X
Ignition Parts	X
Fuel Filter	X
Hydraulic Fluid	X
Hydraulic Filter	X
Oil	X
Oil Filter	X
Miscellaneous	X
Lubricants	
Skirt Maintenance Kits	X
Seal Maintenance Kits	X
Hopper Seals	X
Drive Chains	
Vac Fan Filters	
V-Belts	X

TENNANT SCRUBBERS

Flat Rate	
PM Parts	**Model 550**
Air Cleaner	X
Ignition Parts	X
Fuel Filter	X
Hydraulic Fluid	X
Hydraulic Filter	X
Oil	X
Oil Filter	X
Miscellaneous Lubricants	X
Squeegee Blades	X
Backup Strips	X
Brush Skirts	X
Vac Fan Filter	X
Drive Belt	
Drive Chain	
V-Belts	X