Activation of turf growth with foliar nutrient solution.

The procedure for this cleanup starts with insuring that irrigation is provided for complete coverage of the grass infield and turf along the base path. With complete irrigation coverage provided the next step involves the growth activation of turf and weeds with a high level of foliar applied nutrients. The nutrients were applied (on 08/13/10) with a gasoline powered hydromulch applicator with a 50 gallon tank. The nutrient sprays were applied in two batches of 50 gallons each batch was applied on 0.4 acres of turf that included the infield (82 ft. x 85 ft.) and the turf areas along the 1st and 3rd base lines (160 ft x 27 ft. x 2-both sides) extending to the back of the infield arc. Applying 50 gallons to 0.4 acres amounts to 125 gallon/a, applied 2 times the total gallons per acre is 250 GPA. The liquid fertilizer blend that contained potassium nitrate, calcium nitrate and iron/micro nutrient blend was applied on 08/13/10.

The nutrients used for pre spray activation were:

**Yara Brand Potassium Nitrate Crystaline 13.7-46.3-0** in a 50 lb bag.
The recommended amount is 50 lb/a. To obtain this rate add 10 pounds to 50 gallons and apply twice to 0.4 acres for a total rate of 50 lb/a. However this time (08/13/10) 20 pounds were added to 50 gallons and applied twice to 0.4 acres for a total rate of 100 lb/a doubling of the recommended rate. The actual rate of N is 13.7 lb/a.

**Yara Brand Calcium nitrate 15.5-0-0** in a 50 lb bag.
The recommended amount is 200 lb/a of this formulation. To obtain this rate add 40 pounds to 50 gallons and apply twice to 0.4 acres for a total rate of 200 lb/a. The actual rate of N is 31.0 lb/a.

**Feature 6-0-0, with 10% Fe, 2.5% Mn, 1% Mg and 8% S** in 3.0 lb bag.
The recommended amount is 6.0 lb/a. To obtain this rate add 1.2 lb to 50 gallons and apply twice to 0.4 acres for a total rate of 6.0 lb/a. The actual rate of N applied is .36 lb/a.
Herbicide application following nutrient turf activation.

Following the nutrient activation phase of the cleanup will be the herbicide application phase. The first application will be composed of a mixture of Revolver, Celsius and Barricade with a 1% v/v addition of methylated seed oil. At 25-30 days after this initial application a second application of Sencor will be applied. At 15-25 days after the second application the entire site will be verticut to remove dead weeds and the thatch layer of the Bermuda grass sod. After thatch removal core aeration will be conducted with cores removed and holes filled with dune sand. Once the sand is applied and raked into the soil, Ronstar G and turf fertilizer will be applied to control weed during the turf fill in phase. Nutsedge and some broadleaf weeds will most likely appear during fill in and these will be controlled with Monument (for sedges) and Trimec Southern or SpeedZone Southern (for broadleaf weeds). With regular mowing and proper irrigation, the infield and areas outside the baselines should be free of weeds and in top turf shape.

Herbicides and amounts (OK-application date 09/01/10).

1. Spray application is made using a hand held 5 nozzle boom fitted with TeeJet 8004LP nozzle tips. Spray powered with a gasoline Honda with Hypro roller pump. GPA is 40 with 13 PSI at handle. Tank is 26 gallons; applying at 40 GPA can cover .65 acres or 28,314 ft². Estimated area of infield and turf between base paths and dugouts home to 1st and 3rd base is .40 acres or 17,424 ft². Any extra spray will be applied to turf on the outfield side of the infield arc.

2. Herbicides applied will be:
   a. **Barricade**, recommended amount is .5 lb/a, amount added to 26 gallon tank is 3 lb (136 g).
   b. **Celsius**, recommended amount is 4.9 dry oz/a, amount added to 26 gallon tank is 3.2 dry oz (91 g).
   c. **Revolver**, recommended amount is 26.2 oz/a, amount added to 26 gallons is 17.0 oz (775 ml).
   d. **MSO** (methylated seed oil), added to obtain 1% of finished spray, amount added to 26 gallons is 33.3 oz (945 ml).

Thatch breakup and fertilization (09/23/10).

At this date a flexible drag harrow was pulled across the infield and baselines to breakup the thatch and isolate weedy grasses from the surrounding soil. A 150 pounds of potassium nitrate (13.7-46.3-0) was used on .4 acres of the infield and sidelines

Second herbicide application (10/14/10)

On this date Sencor 75DF will be applied with a .5% v/v MSO. A total of 26 gallons will be applied 2 times for an effective GPA of 80 gallons. Into each 26 gallon batch add 103 grams Sencor 75 DF and 500 ml MSO. Sencor rate is 2/3 lb/a with 80 GPA carrier volume.
Third herbicide application (OK- 11/10/10)

Observations made at 18 days after the Sencor indicated that goose grass appears to be completely control with large clumps rotting and matted to the soil due to heavy fall (early Nov-2010) rains. The second application of Celsius was made 27 days after the Sencor application. Using a 80 GPA will require 1.6 oz or 45.5 grams into 26 gallons and apply 2 times to the ball field. Also used 1% MSO or 33.3 oz or 945 ml per 26 gallons. Your team provided Monument and we used 2 5-gram packets in 26 gallons and applied only once to the entire infield and base lines. We should have split the 5 gram packets into each 26 gallon batch but goofed again.

Foliar Feed 14 days after Celsius/Monument (OK-11/24/10). We used a 50 gallon hydromulch applicator and made two application with application in opposite directions.

Yara Brand Potassium Nitrate (13.7-46.3-0.0) we need **20 pounds total**, 10 pounds in 50 gallons and apply 2x's. On this date we applied 20 and 23.8 pounds in each batch, thus a doubling of intended rates

Yara Brand Calcium nitrate (15.5-0-0) we need **80 pounds total**, 40 pounds in 50 gallons and apply 2x's. On this date we did actually apply 40 lb in each batch

Feature 6-0-0, with 10% Fe, 2.5% Mn, 1% Mg and 8% S, we need **2.4 pounds total**, 1.5 lb in 50 gallons apply 2x's. Ok, just right 1.5 lb in each batch and used up all the 3 lb bag.

No dry prill 21%-N was applied.

**Observations on 11/30/10:**

On this date it is clear that the Dallas grass is drying up and appears to be controlled at 90-95%. The Love grass is not showing any necrosis just slight yellowing and reduced vigor. However, the Love grass was relatively easy to pull out by the roots. Goosegrass is now regrowing from old stumps and not from seed germination. Looks like it’s time for another Sencor application.

Forth Herbicide application on 12/08/10)

On this date Sencor 75DF will be applied with a .5% v/v MSO. A total of 26 gallons will be applied 2 times for an effective GPA of 80 gallons. Into each 26 gallon batch add 103 grams Sencor 75 DF and 500 ml MSO. Sencor rate is 2/3 lb/a with 80 GPA carrier volume.
Fifth Herbicide application on 12/28/10

Herbicides applied will be:

a. **Celsius**, recommended amount is 4.9 dry oz/a, amount added to 26 gallon tank is 3.2 dry oz (91 g). For a double application, into 26 gallons add **46 grams and apply 2 times**.

b. **MSO** (methylated seed oil), added to obtain 1% of finished spray, amount added to **26 gallons is 33.3 oz (945 ml)**.

c. Monument add **1 5-gram packets in 26 gallons and apply 2 times**.

Sixth herbicide application on 02/09/2011.

Honolulu City and County crew made a spot application to goosegrass within the in-field area at 1 oz Revolver/gallon. Total of 2 gallons of spot treatment mix was applied.

Seventh herbicide application on 04/12/11, ok applied

**Specticle** for goosegrass at 3.85 oz/a (no more than 5 oz/application, no more than 7.1 oz/yr. Total area covered is .65 acres with 26 gallon tank applying 40 GPA at 13 PSI. Amount to add to 26 gallons is 2.5 oz or 73.9 grams. A 2.5 oz pack was split into 34 grams for the first batch and the remaining amount in the water soluble bag in the second batch. The entire 2.5 oz was applied to .65 a or 3.85 oz/a.

**Revolver** for goosegrass at 26.2 oz/a. Total area covered is .65 acres with 26 gallons at 40 GPA at 13 PSI. Amount to add to 26 gallon tank is 17.03 oz or 504 ml. Make two applications of 26 gallons use 8.51 oz or 252 ml of Revolver

**Surfactant, Latron b 1956** with 100 ml/26 gallons (.1% v/v) amounts to 13 oz/100 gallons, Maximum recommended amount for hard to wet plants is 8 oz/100 gallons. This amount was added to both 26 gallon batches.
8th herbicide application for 06/18/2012.

The last herbicide application was on 04/12/11 and included the following: Specticle at 3.85 dry oz/a, Revolver at 26.2 oz/a with wetting agent Latron B-1956 at .1% v/v.

The sprayer used for this application has a 26 gallon tank with gas powered pump. The boom has 5 8004 DG tips applying 40 GPA at 35 PSI. During pre-spray calibration a single nozzle output for 25 seconds was 580 ml. Good hydraulic agitation was observed at full engine throttle, regulator a max pressure and agitation line adjusted for 35 PSI. Walking speed is 100 linear feet in 25 seconds.

Dismiss for enhanced goose grass control. Recommended rate on Bermuda grass is 8-12 oz/a. On this date applying 10 oz/a. The area covered with the 26 gallon tank is .65 acres. The amount of Dismiss needed to apply to this area is 6.5 oz (192.2 ml). Since the area is covered 2 times 3.25 oz (96.1 ml) will be added to 26 gallons and applied two times.

Specticle for root pruning of perennial grassy weeds and pre on broadleaf weeds like prostrate spurge and grassy weeds like Henry crabgrass, goose grass and tufted love grass. Specticle can be applied at 5.0 oz/a on Bermuda grass turf, the amount for this application will be 3.85 oz (109.1 gram)/a. The area covered with the 26 gallon tank is .65 acre. The amount added to the entire site will be 2.5 dry oz (70.8 gram)/a. Since the area is covered 2 times, 1.25 oz (35.4 grams) will be added to 25 gallons and applied two times.

Revolver for goose grass and some suppression of dallisgrass & crabgrass at 26.2 oz/a (maximum for single application). Amount of Revolver need to apply to this area is 17.03 oz (504 ml). Since the area is covered 2 times, 8.5 oz (252 ml) will be added to 25 gallons and applied two times.

MSO will be applied at 1.0% v/v, the amount added to 26 gallons is 33.3 oz (985 ml). The MSO will be added to each 26 gallon batch of spray.

Observations on 07/05/12, there was sprayed foliar dissication of goose grass, love grass, and nutsedge. Creeping indigo appeared dark green with little to no foliar dessication. Dallis grass has interveinal yellowing, a characteristic symptom of Dismiss injury. Dallis grass was flashing yellow with some distortion of emerging seed heads, that were also yellow. Love grass appeared to be the least affected grass with good regrowth occurring at this time. The next herbicide application will be Celsius and Monument to clean up the Dallis grass, Love grass and creeping indigo as well as nutsedge control. Not all areas were treated 2 x’s, the area along the batting cage and the inside arc of the of the outfield was treated 3 X’s due to extra spray material in the tank.
9th herbicide application for 07/11/12.

The last herbicide application was on 06/18/12. For this 9th application we will apply Celsius at a rate of 4.9 dry oz (138.9g)/a and Monument at .53 dry oz (15g)/a all applied with MSO at 1% v/v. Values provided below are for 26 gallons of finished spray solution. This 26 gallons is applied twice to the entire infield, outside base paths and a 12 ft wide arc across the outside of infield. Values below are provided for two types of booms. The boom used in the past was a five nozzle boom with 8004 DG tips applying 40 GPA at 35 PSI. A new 3-wheeled 12 nozzel boom with 8003 VP tips applying 54 GPA at 35 PSI is also available for use. As in the past, two passes across all treated surfaces will be used to minimize skips and streaking.

Mix for 5 nozzle boom with 8004 DG tips at 35 PSI and 40 GPA and cover .65 acres:

Celsius at 4.9 oz/a, amount added to 26 gallon tank is 3.2 dry oz (91 g). For a double application, into 26 gallons add 46 grams and apply 2 times.

Monument at .53 dry oz (15g)/a, amount added to a 26 gallons tank is 9.75 grams. For a double application add one 5-gram packets in 26 gallons and apply 2 times.

MSO (methylated seed oil), added to obtain 1% of finished spray, amount added to 26 gallons is 33.3 oz (945 ml).

Mix for 12 nozzle boom with 8003 VP tips at 35 PSI and 54 GPA and cover .5 acres:

Celsius at 4.9 oz/a, amount added to 26 gallon tank is 2.45 dry oz (69.5 g). For a double application, into 26 gallons add 34.8 grams and apply 2 times.

Monument at .53 dry oz (15g)/a, amount added to a 26 gallons tank is 7.5 grams. For a double application add 3.75-grams to 26 gallons and apply 2 times.

MSO (methylated seed oil), added to obtain 1% of finished spray, amount added to 26 gallons is 33.3 oz (945 ml).
10th herbicide application for 08/30/12.

The last herbicide application was on 07/11/2012 and included both Celsius and Monument. This application is designed to weaken the Love grass and control the Dallis grass, nutsedge and creeping indigo. Observations on 08/15/12 showed yellowing of the Love grass and Dallis grass. Goose grass was still growing from old clumps and some new seedlings. In this 10th spray, the purpose is to put a heavy contact pressure on Love and goosegrass and lay down a strong layer of preemergence for grassy weed control.

**Mix for 5 nozzle boom with 8004 DG tips at 35 PSI and 40 GPA and cover .65 acres:**

On this date Sencor 75DF will be applied with a .5% v/v MSO. A total of 26 gallons will be applied 2 times for an effective GPA of 80 gallons. Into each 26 gallon batch add

**103 grams Sencor 75 DF and 500 ml MSO.** Sencor rate is 2/3 lb/a with 80 GPA carrier volume.