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RESPONSE TO FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION COMMENTS
ON SITE ASSESSMENT REPORT ADDENDUM II UNDERGROUND STORAGE TANK SITE
22 INSTALLATION RESTORATION SITE 21 NAS PENSACOLA FL
08/19/2011
NAVFAC SOUTHERN

**NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA
SITE ASSESSMENT REPORT ADDENDUM II
UNDERGROUND STORAGE TANK SITE 22 (IR SITE 21)**

**RESPONSE TO FDEP COMMENTS
Dated August 19, 2011**

Comment 1: The Department has reviewed the Response to FDEP Comments dated November 29, 2010 and Revision 2 to the Site Assessment Report Addendum III for Underground Storage Tank Site 22 (IR Site 21), Naval Air Station Pensacola, dated March 2011 (both received by e-mail on April 18, 2011), prepared and submitted by Tetra Tech NUS, Inc. The Response to FDEP Comments letter appears to adequately address my previous comments on the Site Assessment Report Addendum III with an agreement that the Navy may propose to conduct the additional assessment I requested in comment (6) proposal (4) as part of a Monitored Natural Attenuation Plan/Remedial Action Plan as agreed to in the UST Site 22 (IR Site 21) Teleconference of January 13, 2011. However, the agreed to recommendations for progressing with site cleanup do not seem to be adequately conveyed in Revision 2 of the Site Assessment Report Addendum III. Monitoring only is identified as the preferred method for addressing the lead contamination detected on site even though concentrations of lead in groundwater in several monitoring wells and DPT groundwater sampling locations nearest to Pensacola Bay were above surface water criteria. There was no mention of further groundwater monitoring wells being necessary to delineate the plumes in all directions, both horizontally and vertically, as part of the RAP. There was also no mention of an evaluation of the seawall being used as an engineering control keeping contaminated groundwater from discharging to Pensacola Bay. Lastly, the conclusion that there is not a continuing source because there is not a pattern to the lead exceedances would seem to be in error as clearly lead is only an issue in wells located on the eastern part of the site and not on the western part of the site and the lead seems to originate from where two aboveground storage tanks were located north of Radford Boulevard. A case might be made that there is no continuing source if soil analytical data collected from the vicinity of the aforementioned aboveground storage tanks shows that lead concentrations in soil are low and not leaching to groundwater so as to create groundwater contamination.

Response: Groundwater data for lead at Underground Storage Tank (UST) Site 22 was from multiple sampling events with minimal overlap of the monitoring wells sampled. Interpretation of laboratory analytical data from the multiple sampling events suggests that there is considerable variability in the concentration of lead. A statistical evaluation of the UST Site 22 laboratory analytical data for lead was provided in Attachment C of Site Assessment Report Addendum III. The statistical evaluation indicates that the lead data exhibits a positively-skewed lognormal or gamma distribution which could be indicative of true contamination, or it could represent a natural environmental distribution in which samples are elevated due to natural variations. Therefore, lead concentrations were compared to manganese concentrations to determine if there was a positive correlation thereby indicating a natural geochemical occurrence. Also, manganese was compared with zinc to verify that its concentrations were also a natural geochemical occurrence. The evaluation did not find a significant correlation between lead and

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manganese or manganese and zinc. Interpretation of this statistical evaluation suggests that lead concentrations could be site related. Additionally, the evaluation of a trend in lead concentrations by the Mann-Kendall test suggest that a significant trend was not present at an 80 percent confidence level, that no significant attenuation was apparent, and the lead concentrations appeared to be stable. The data evaluation also suggests that fluctuations in the lead concentrations were likely due to natural environmental conditions in a complex geochemical system. In addition, the Kolmogorov-Smirnoff statistical test was conducted at a 95 percent level of significance to determine the presence or absence of a significant trend. The results of this statistical evaluation suggests that monitoring well locations MW-2, MW-4 and MW-11 were data outliers and could be considered as potential source areas.

Based on the above, quarterly monitoring was identified as the preferred method to determine the current nature and extent of lead in groundwater at UST Site 22 and determine if it is discharging to Pensacola Bay at concentrations that exceed Florida surface water quality criteria. The quarterly monitoring will include all existing monitoring wells (after conducting a well inventory) and newly installed shallow and deep monitoring wells at hydraulic downgradient locations near the seawall, and hydraulic sidegradient to define the lateral edge of the lead plume.

The water level and laboratory analytical data collected from the quarterly monitoring of shallow and deep monitoring wells will be used to provide sufficient data to develop a groundwater model to simulate groundwater flow paths at UST Site 22. The quarterly monitoring data and groundwater model results would be used to evaluate whether the seawall provides an effective engineering control for keeping the lead impacted groundwater from discharging into Pensacola Bay.

Additionally, the quarterly monitoring data will be evaluated using statistical analysis to determine the trend (no trend, increasing or decreasing) in the concentrations of lead at UST Site 22. This data will also be used to determine if a potential source area(s) is present. If quarterly monitoring data indicates that a source area(s) is potentially present and contributing to the concentrations of lead in groundwater, then additional soil sampling would be conducted to: evaluate the site specific lead concentrations in soils above the water table; develop site specific leaching to groundwater concentration; and determine if a source removal action may be necessary.

Based on the site history, it was stated that sludge from the tank bottoms may have been placed in the vicinity of the aboveground storage tanks (ASTS). Because lead is a component of aviation gasoline, this action could potentially result in a source area for lead. Therefore a review was conducted of available aerial photographs obtained from the Florida Department of Transportation to determine if potential source areas for placement of the tank bottoms were

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apparent. The aerial photographs reviewed were from 1961, 1970, 1973, 1981, 1983, 1989, 1992, 1993, 1997, 2000, 2004, 2007, and 2010 (Please refer to Attachment 1, for Aerial Photographs 1 through 13). The majority of the aerial photographs show the locations of the 5 ASTs north of Radford Blvd. and 4 ASTs south of Radford Blvd. The two northwestern most AST locations were not visible in all of the aerial photographs. One of the northwestern ASTs is within the intersection of Radford Blvd and the newly constructed (~ 1989) Duncan St., (Aerial Photograph 6). The other northwestern AST location was obscured during the construction of a building on the northeast corner of Radford Blvd Duncan St., (Aerial Photographs 12 and 13). The northern ASTs and containment structures (north of Radford Blvd) appeared in aerial photographs from 1961 to 1973 (Aerial Photographs 1 through 3), but appear to have been removed prior to 1981 (Aerial Photograph 4). The southern ASTs and containment structures (south of Radford Blvd) appeared in aerial photographs from 1961 to 1993 (Aerial Photographs 1 through 8) but appear to have been removed prior to 1997 (Aerial Photograph 9). Based on the aerial photograph review, the areas around the tanks appeared to be maintained lawns that were impacted at various time by nearby construction activities. None of the aerial photographs appear to show an area(s) of staining or stressed vegetation that potentially would indicate the placing of tank bottoms on the maintained lawns.

The above information will be incorporated into the final SARA III report. Additionally, the Remedial Action Plan will provide details on the locations and depths of the new monitoring wells, sampling and analysis of groundwater samples, groundwater modeling to evaluate the whether the seawall is an effective engineering control, and statistical evaluation of the groundwater samples.

ATTACHMENT 1
AERIAL PHOTOGRAPH REVIEW



Aerial Photograph 1: Florida Department of Transportation, December 1961



0430 x 0430 x 8 BPP 7/67 98% 12.74 MB / 67.79 MB 9/2/2011 / 13:25:31

Aerial Photograph 2: Florida Department of Transportation, April 1970



8431 x 8431 x 8 BPP 12/67 107 % 12.62 MB / 67.80 MB 9/2/2011 / 13:33:31

Aerial Photograph 3: Florida Department of Transportation May 1973



16658 x 16658 x 8 BPP 27/67 47 % 13.66 MB / 271.06 MB 9/2/2011 / 14:02:27

Aerial Photograph 4: Florida Department of Transportation, March 1981



0430 x 0430 x 8 BPP 35/67 100 % 13.45 MB / 67.79 MB 9/2/2011 / 14:25:04

Aerial Photograph 5: Florida Department of Transportation, September 1983



Aerial Photograph 6: Florida Department of Transportation, October 1989

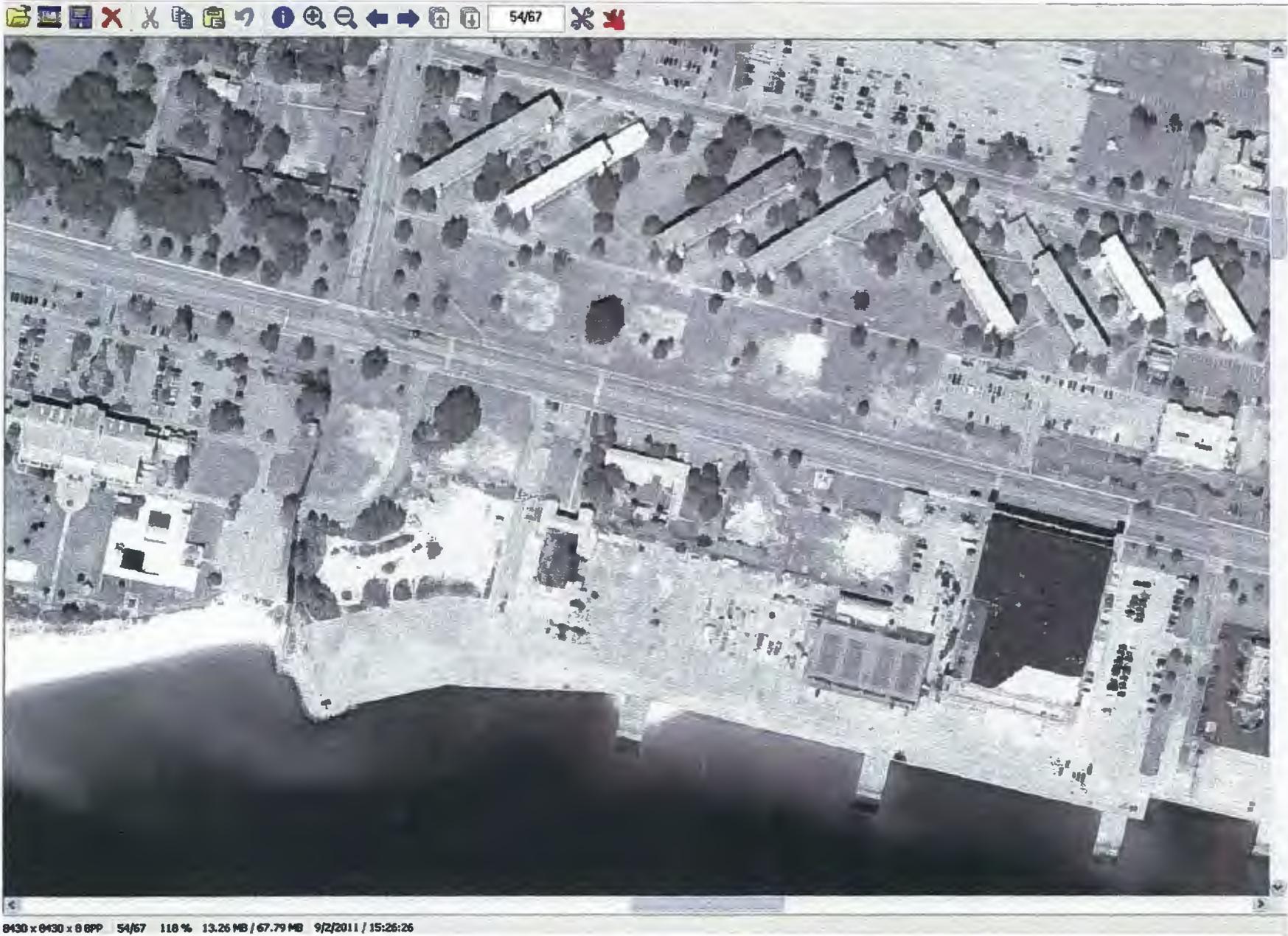


Aerial Photograph 7: Florida Department of Transportation, March 1992



8431 x 8431 x 24 BPP 49/67 131 % 14.96 MB / 203.39 MB 9/2/2011 / 15:14:11

Aerial Photograph 8: Florida Department of Transportation, October 1993

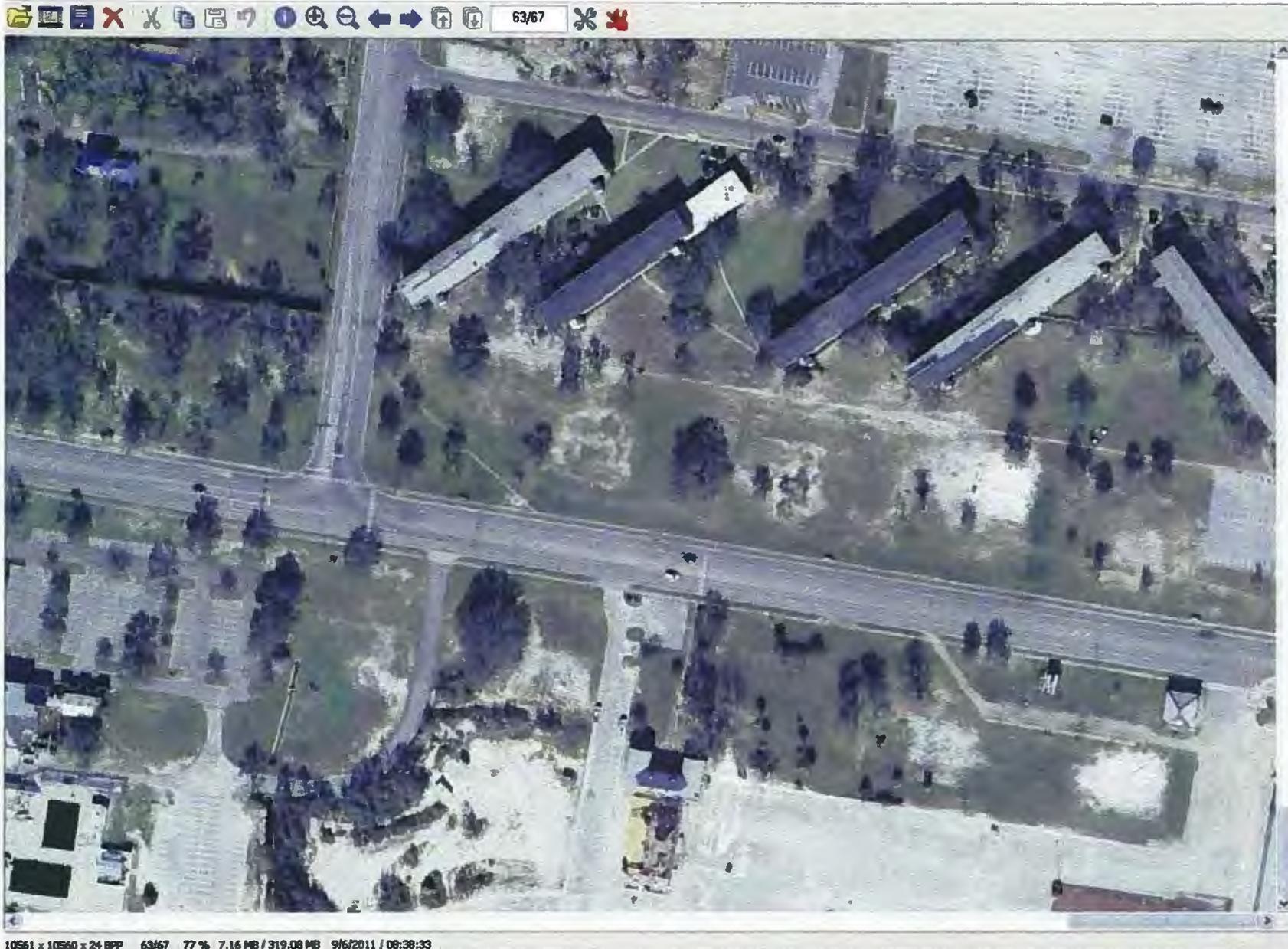


8430 x 6430 x 8 8PP 54/67 118 % 13.26 MB / 67.79 MB 9/2/2011 / 15:26:26

Aerial Photograph 9: Florida Department of Transportation, February 1997

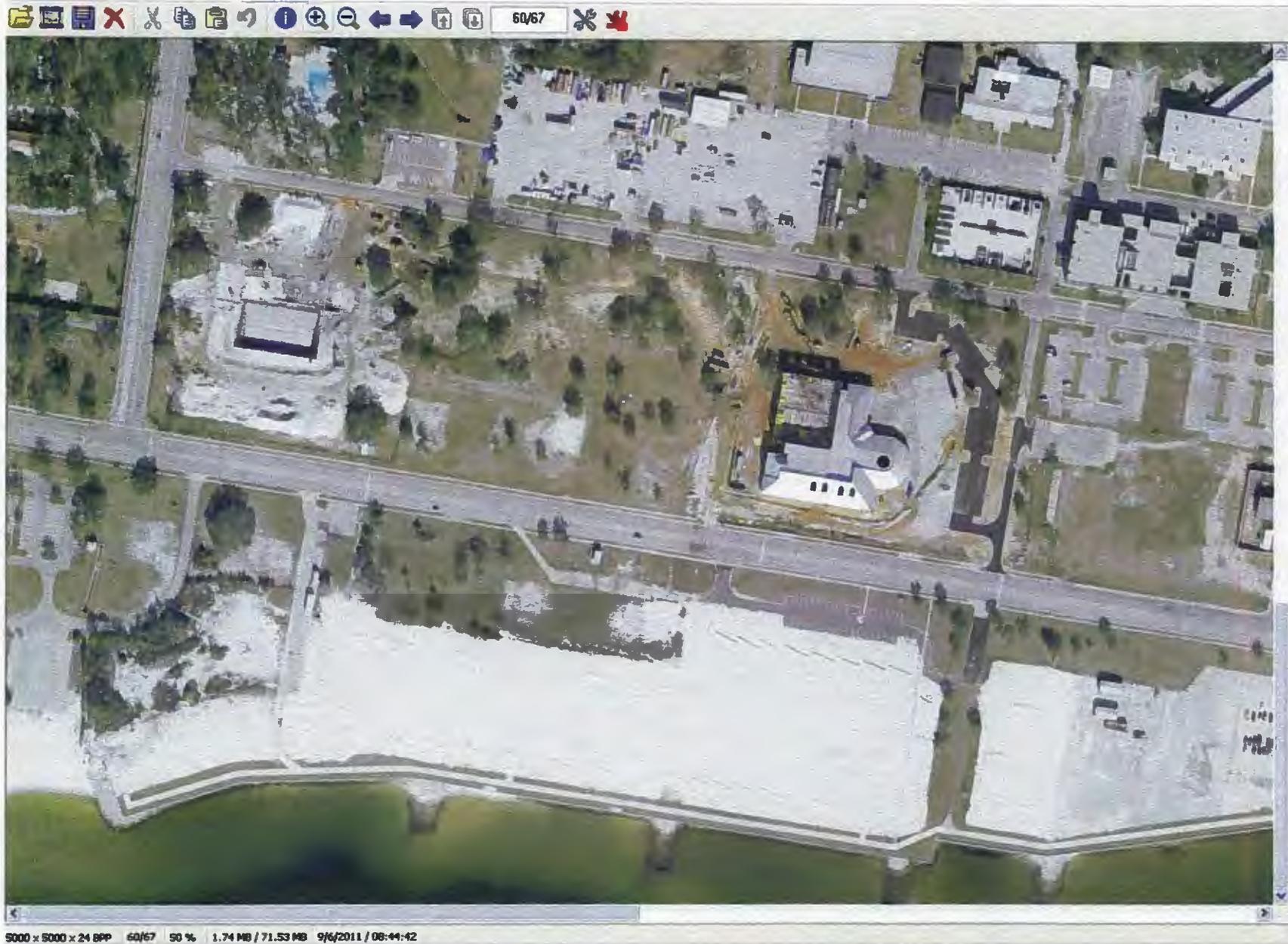


Aerial Photograph 10: Florida Department of Transportation, February 2000



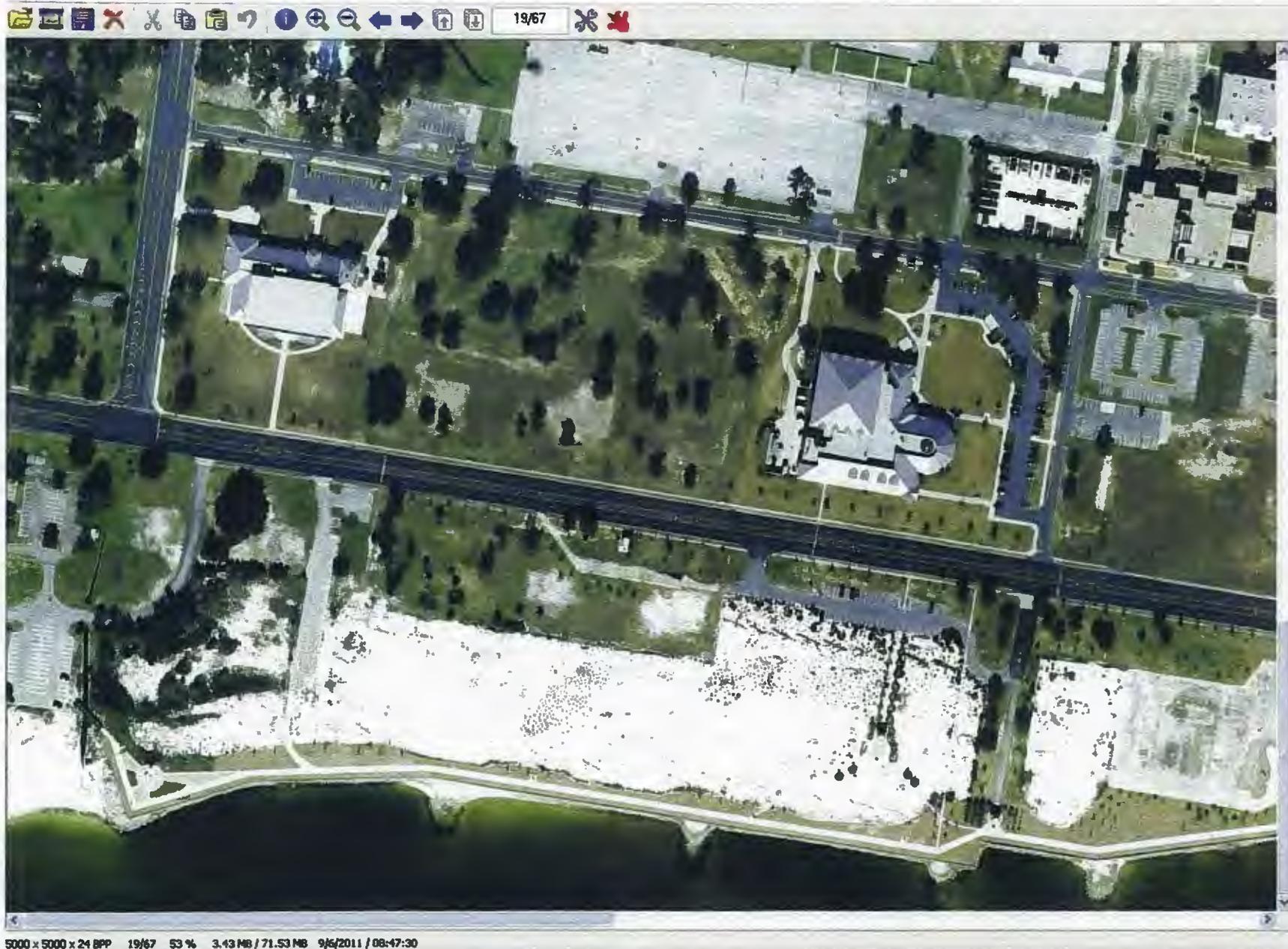
10561 x 10560 x 24 BPP 63/67 77% 7.16 MB / 319.08 MB 9/6/2011 / 08:38:33

Aerial Photograph 11: Florida Department of Transportation, December 2004



9000 x 5000 x 24 BPP 60/67 50 % 1.74 MB / 71.53 MB 9/6/2011 / 08:44:42

Aerial Photograph 12: Florida Department of Transportation, December 2007



Aerial Photograph 13: Florida Department of Transportation, December 2010