JACKSONVILLE, FLORIDA

OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS)

BENTHIC SURVEYS: 1995 AND 1998

SUBMITTED BY:
MEL PARSONS

SCIENCE AND ECOSYSTEM SUPPORT DIVISION
ECOLOGICAL ASSESSMENT BRANCH
ATHENS, GEORGIA

TABLE OF CONTENTS

1.0 INTRODUCTION/BACKGROUND INFORMATION 1

2.0 OBJECTIVES 1

3.0 SURVEY/SAMPLING METHODOLOGIES 4

3.1 Sediment Mapping 4
3.2 Water Quality 5
3.3 Sediment Sampling 5
3.3A Sediment Particle Size 5
3.3B Sediment Chemistry 6
3.3C Benthic Macroinvertebrate Infauna 7

4.0 Results 7
4.1 Water Quality 7
4.2 Particle Size Analysis 8
4.3 Metals 8
4.4 Nutrients 12
4.5 Extractable organics 12
4.6 Volatile Organics 12
4.7 Sediment Mapping 13
4.8 Macroinvertebrates 13

5.0 Conclusions 14

6.0 **REFERENCES** 17

7.0 **APPENDICES** 18
APPENDIX A: METALS IN SEDIMENT 19
APPENDIX B: EXTRACTABLE ORGANICS IN SEDIMENT 22
APPENDIX C: VOLATILE ORGANICS IN SEDIMENT 28
APPENDIX D: NUTRIENTS IN SEDIMENT 34
APPENDIX E: NUTRIENTS IN WATER (1998 SURVEY ONLY) 36
APPENDIX F: PARTICLE SIZE ANALYSIS 38
APPENDIX G: CTD PROFILES 40
APPENDIX H: CHLOROPHYLL a 53

FIGURES

FIGURE 1 STATION MAP - 1995 2

FIGURE 2 STATION MAP - 1998 3

FIGURE 3 SEDIMENT PARTICLE SIZE COMPARISON - 1995 vs 1998 9

FIGURE 4 METAL TO ALUMINUM COMPARISON - 1995 10

FIGURE 5 METAL TO ALUMINUM COMPARISON - 1998 11

TABLES

TABLE 1 STATION LOCATIONS - 1995 15

TABLE 2 STATION LOCATIONS - 1998 16

1.0 INTRODUCTION/BACKGROUND INFORMATION

The Jacksonville Ocean Dredged Material Disposal Site (ODMDS) is an active disposal site that has been in use since 1973. The site receives material from the Jacksonville entrance channel and harbor area at Jacksonville, FL. Preliminary to a new disposal initiative from Mayport Harbor, sediment mapping was conducted in March 1995, using gamma isotope spectroscopy to generate gamma signatures of site sediments. Based on this mapping, a pre-disposal benthic survey was conducted in July 1995. From November 1996 through February 1997, the Jacksonville ODMDS received approximately 1.1 million cubic yards of dredged material from the Mayport Naval Station turning basin and entrance channel. A post disposal sediment mapping was conducted in April 1997. A post disposal benthic survey was conducted in July 1998. The purpose of this survey was to determine what changes or impacts may have occurred to the benthic community at the disposal site as a consequence of the disposal activity. Sampling station selection was based upon the results of the sediment mapping survey as well as sampling some of the pre-disposal sampling sites.

The survey area is located approximately 2 miles south of the seaward terminus of the Jacksonville, FL entrance channel and is approximately one square nautical mile in size (Figures 1 and 2). Depths ranged from 40 to 65 feet. Twelve stations were selected both in 1995 and 1998 for sediment chemistry and macroinvertebrate analysis (Figures 1 and 2 and Tables 1 and 2). Of the twelve stations, ten were at the same location for both surveys in order to determine changes between studies. Two stations, numbers 8 and 10 were moved in the 1998 study in order to sample areas of the disposal site in which the sediment mapping survey indicated dredge material may be present. Of the twelve sediment stations, six were selected for water quality analysis. The water quality stations were selected partially based on the indicated presence of dredge material from the sediment mapping survey as well as an attempt to select representative background stations.

2.0 OBJECTIVES

Objectives of the survey are to characterize selected representative areas of the sea floor from a sedimentological, chemical, and biological perspective. The Objective of the macroinvertebrate sampling it to determine whether or not dredged material that has been placed at the site during the past has caused a recognizable shift in the numbers and kinds of benthic macroinvertebrates and whether any such changes may be deemed as adverse. Further, sampling and chemical analyses of the water and sediments associated with the site will be used to characterize conditions at the site as they presently exist and will assist in interpretation of benthic community data. Information gleaned from these efforts will be used to guide management decisions relative to future disposal at the site.

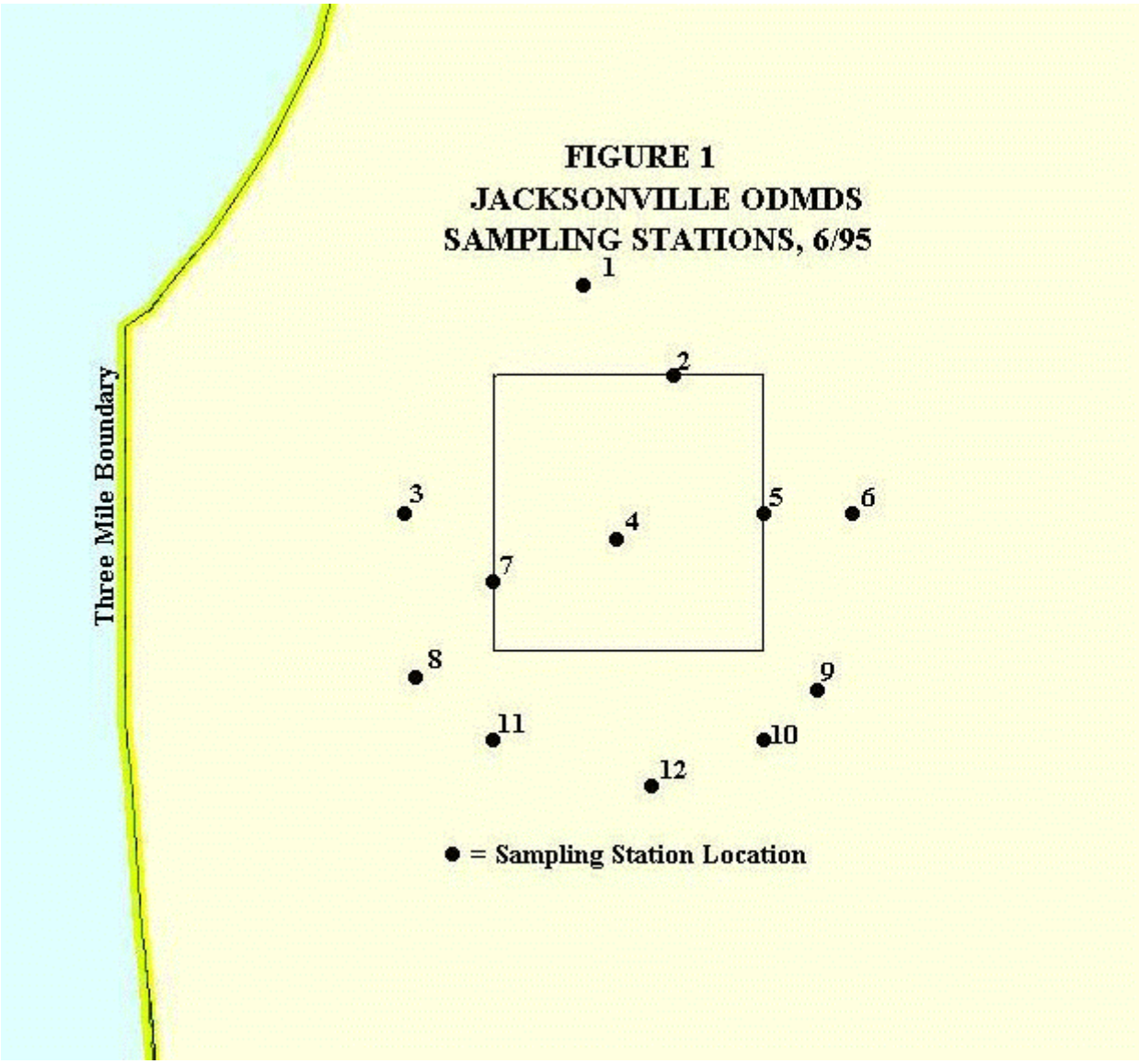


FIGURE 1
JACKSONVILLE ODMDS
SAMPLING STATIONS, 6/95
Three Mile Boundary
1
2
3
4
5
6
7
8
9
10
11
12
● = Sampling Station Location

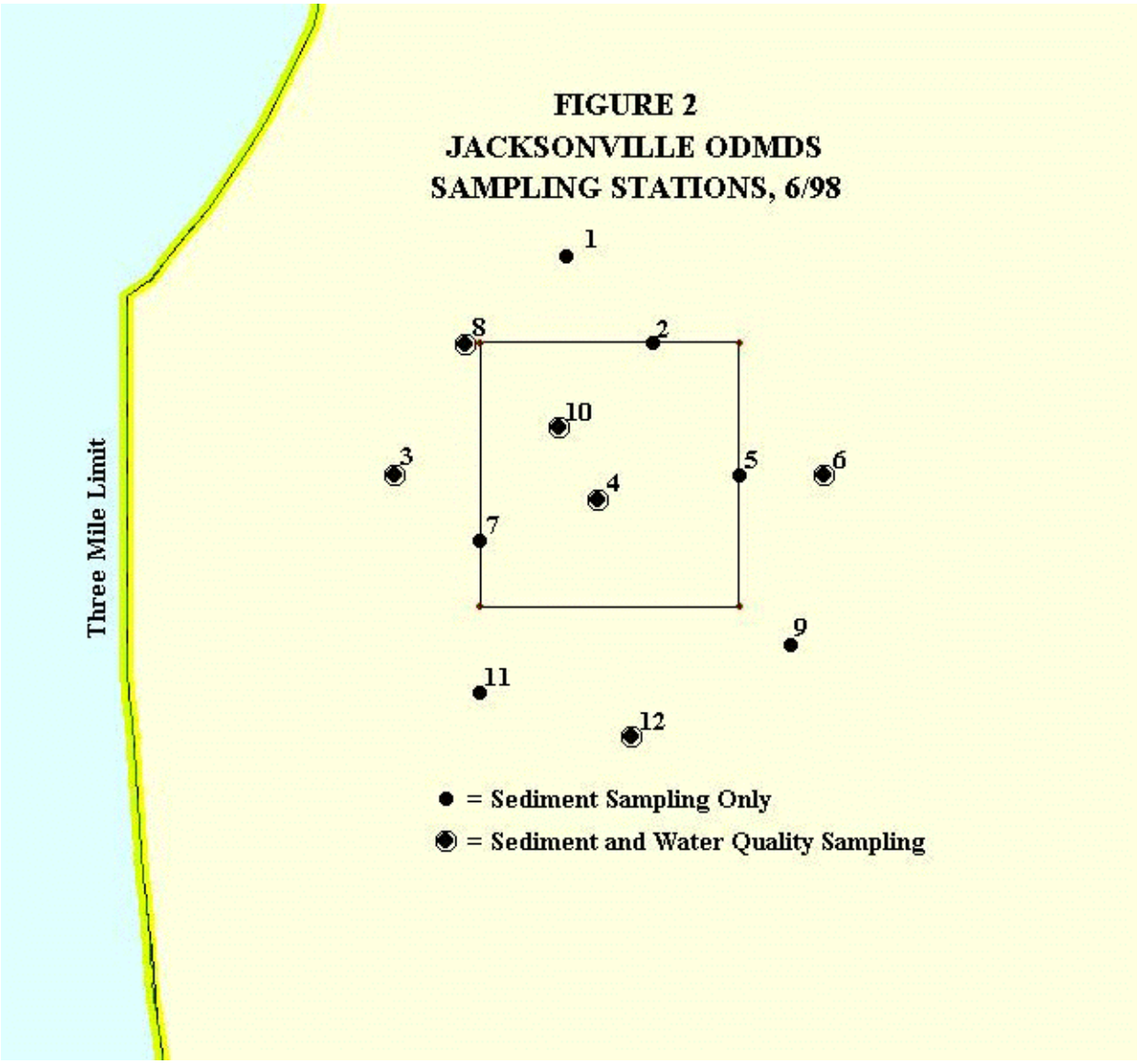


FIGURE 2
JACKSONVILLE ODMDS
SAMPLING STATIONS, 6/98
Three Mile Limit
1
2
3
4
5
6
7
8
9
10
11
12
= Sediment Sampling Only
= Sediment and Water Quality Sampling

3.0 SURVEY/SAMPLING METHODOLOGIES

With the exception of collection methods for volatile organic compounds in sediments, all sampling methodologies were identical between the 1995 and the 1998 surveys.

The boundaries of the Jacksonville ODMDS measure approximately 1.0 x 1.0 Nautical Miles. Twelve stations were be established in a pattern developed from the results of the gamma isotope and Continuous Sediment Sampling System (CS_3) sediment mapping surveys. Station locations were associated with zones of differing gamma isotope signatures as well as bathymetric profiles.

Station locations were determined by Differential Global Positioning System (DGPS) and marked by a surface buoy deployed from the Rigid Hull Inflatable Boat (RHIB) prior to sampling at each station. Station locations for water quality sampling were acquired through DGPS positioning with the ship remaining on station while Conductivity, Temperature, Depth (CTD) and light profiles were conducted and water samples were collected.

3.1 Sediment Mapping

The Center for Applied Isotope Studies (CAIS) of the University of Georgia conducted sediment mapping of the area surrounding and including the disposal area in March 1995 (CAIS. June, 1995) and April 1997 (CAIS. July, 1997). The objective of the mapping was to determine relative isotopic and elemental concentrations of the sediments in and surrounding the site in order to determine the approximate location of dredged material at the site. Sediment mapping utilizes a combination of Gamma Isotope Mapping System (GIMS) and a Continuous Sediment Sampling System (CS^3). GIMS records seafloor gamma radiation data for selected isotopes, generally ^{214}Bi (Bismuth), ^{208}T1 (Thallium), ^{40}K (Potassium) and total activity. These isotopes are utilized as markers. For example ^{214}Bi is associated with uranium content of phosphatic deposits, ^{208}T1 is associated with heavy minerals, and ^{40}K is often found in clay sediments. The CS^3 consist of a system to pump a continuous slurry of bottom sediments up to the ship where a sample is collected approximately every 1000 feet. The sample is dewatered by vacuum and the sediment is deposited on a glass fiber filter wafer. The sample is later analyzed for elemental concentrations with the use of X-ray fluorescence (XRF)

The sediment mapping data was utilized to help locate stations for both the 1995 and 1998 surveys. Ten of the twelve stations chosen for the 1995 survey were resampled in the 1998 survey in an attempt to compare changes. Two stations, (stations 8 and 10), were relocated in 1998 based on the sediment mapping, in order to sample areas that appeared to be mostly dredged material.

3.2 Water Quality

Water column chemistry at ODMDS sites has typically shown little or no impact due to dredged material disposal in past studies, therefore water samples were not collected during the 1995 survey. Water samples were collected during the 1998 survey. During the 1998 survey, water samples were collected at six of the twelve sampling stations in order to characterize the physicochemical water quality parameters of the disposal site. Samples were only collected at six of the twelve stations because past surveys of dredged material disposal sites conducted by EPA in Region 4 show little or no changes spatially in the chemical constituents in the water column proximate to the other stations. To characterize the general water quality associated with the dump site, the following water column parameters were sampled: dissolved oxygen (DO), salinity, temperature, nitrogen series which include total phosphorus (TP), nitrate-nitrite nitrogen (NO_2+NO_3), ammonia (NH_3), and total kjeldahl nitrogen (TKN), total phosphorus (TP), light transmission, and Chlorophyll a.

Measurements of DO, salinity, temperature, and pH were accomplished utilizing the EPA OSV Anderson CTD/rosette. Readings of these parameters were continuous from the surface to one foot above bottom. Sampling bottles attached to the CTD/rosette frame were remotely triggered to obtain grab samples for nutrient analysis at the surface, mid-depth, and bottom,.

Using a calibrated marine photometer, percent visible light transmission was measured along a vertical profile from the surface to the depth at which 10 percent of incident light was available. At depths where visible light transmission measured 90, 50, and 10 percent of incident light, grab samples of water were obtained with a VanDorn sampler for chlorophyll a analysis of each individual depth.

All sampling procedures and sample preservation for analyses was conducted according to the Science and Ecosystem Support Division (SESD) Ecological Assessment Branch (EAB) and Enforcement and Investigations Branch (EIB) Standard Operating Procedures (SOP), (US EPA 1996, 1998).

3.3 Sediment Sampling

Sediment sampling at selected stations was accomplished by divers using hand operated coring devices. Samples were collected for sediment particle size analyses, sediment chemistry, and benthic macroinvertebrates. The sampling device and handling/preservative protocol for each type of sample follows below:

3.3A Sediment Particle Size Samples for particle size were collected with acrylic two inch coring tubes penetrating 15 cm (or to the point of refusal if less than 15 cm) into the substrate. The coring device was maintained in the vertical position, capped at both ends, and returned to the ship. After settling, the structure of the sediment was observed and recorded then the clear

water was decanted and the sediment core placed in a whirl pack, labeled, and frozen for return to the lab. Two replicate samples were obtained at each station. Particle size analyses and organic content was done by the wet sieve method and high temperature ignition according to SESD SOP.

3.3B Sediment Chemistry Analyses for the following parameters were conducted at the SESD lab in Athens, Georgia: metals scan, nutrients which includes TP, NO_2+NO_3, NH_3, and TKN, extractable organic compounds and volatile organic compounds (VOC's). At each station, samples for metals, nutrient and extractable organic analysis were collected in two, 2 inch diameter Teflon coring tubes. Sample handling of cores was similar to that specified above for particle size. After decanting, the two core samples for metals, nutrients and extractable organic compounds were transferred to a glass pan or Teflon lined pan and thoroughly mixed. The sample were then alloquated into two 8 oz. glass containers and preserved by storing at 4EC until analyzed. One container was analyzed for extractable organic compounds and the other was analyzed for metals and nutrients. Volatile organic samples were collected by two different methods between the 1995 and the 1998 survey. During the 1995 survey, volatile organics in sediments were collected in a pre-cleaned, milli-Q water filled, glass 2 oz. sediment volatile organic analysis (VOA) container as per the SESD SOP at the time. Between the two surveys, it was determined that there was a potential for loss of volatile organic compounds before analysis with the older method. During the 1998 survey VOC collection was conducted utilizing an adaptation to SW846 Method 5035 to limit the loss of volatile organics and reduce the possibility of contamination from site conditions, (i.e. diesel fumes from ship operations). Water vials (40 mls) were pre-weighed and filled in the lab with milli-Q water. Divers took three replicate samples at each station, filling the vials one quarter full of sediment. In the ship board laboratory, approximately 20 mls of sea water was removed utilizing a pipette, leaving approximately 10 mls of sea water over the undisturbed sediment. The standard method of VOC preservation utilizes sodium bisulfate as a preservative. Sodium bisulfate effervesces when it comes in contact with the calcium carbonate found in all marine sediments in the Southeast. The effervescent action then causes a loss of volatile organics. Therefore, once the 20 mls of sea water were removed, and the samples tagged, the samples were preserved by freezing. Samples were placed on their side in the freezer in a protective container to help prevent breakage from freezing. As a comparison and quality control check of the above procedure, a modified version of the above procedure was performed at six of the twelve sampling stations. VOC samples were collected by divers utilizing a milli-Q filled 2 oz. sediment jar. The diver collected the container full of sediment. In the ship board laboratory, approximately 5 grams of sediment from the 2 oz. container was then weighed and added to a pre-weighed 40 ml vial, along with 10 mls of milli-Q water. Three replicates were taken from the 2 oz. container. These samples were then tagged and placed in the freezer on their sides in a protective container. Sediment dry weight was determined after lab analysis by drying in the Ecological Assessment Branch's sediment lab in Athens, GA.

3.3C Benthic Macroinvertebrate Infauna. Sediment cores were collected by divers to obtain benthic macroinvertebrate organisms. Fifteen replicates per station were collected, in order to

address satisfaction of the species saturation curve for the Jacksonville ODMDS area. This is done to insure that an adequate sample is taken in order to adequately represent the number of unique taxa found in and around the disposal area. A minimum criteria of 75% is necessary to adequately address the number of species in an area (Dennison and Hay, 1967). On two stations, (stations 8 and 10), 30 replicates were taken. After analysis by Vittor and Associates (Vittor and Associates, Inc., 1999), it was concluded that 15 replicates were adequate to produce a representative sample of a particular station. Each replicate was collected with a stainless steel corer measuring 10cm in diameter and screened at the top with 0.5mm wire mesh. Core penetration was limited to 15 cm or the point of refusal if less than 15 cm. Each core was capped in place, secured into cloth bags, and returned to the ship. On board processing involved washing the bagged core sample contents through a #35 screen (0.5mm). The sample retained on the screen after washing was returned to the bag, properly labeled, and placed in a narcotizing solution of magnesium chloride, mixed at a concentration of 1:60 magnesium chloride to seawater, for at least 30 minutes. The bagged material was then completely transferred to its final container and preserved in 10% seawater formalin with a rose bengal staining solution added. Benthic containers were labeled both internally and externally and stored for transfer to contract lab facilities.

4.0 Results

4.1 Water Quality

As stated earlier water samples for nutrient analysis were collected during the 1998 survey, but not during the 1995 survey. Physicochemical parameters were measured at six locations during both surveys. Nutrients at all stations sampled in 1998 were all either below analytical detection limits or close to the analytical detection limit values. With the exception of D.O., physicochemical parameters, measured by CTD profiles; temperature, salinity, oxygen and pH were at normal levels and very consistent between stations (Appendix G). D.O. appeared to be low during 1998, ranging from 3-5 mg/l as opposed to approximately 6 mg/l in 1995.

Chlorophyll a samples were collected at the same six stations as the physicochemical measurements. During the 1995 survey, concentrations of Chlorophyll a were up to 10 ug/l, with the concentrations at most stations ranging from 3-6 ug/l. The concentrations in 1998 were generally 2 mg/l or less. These differences are probably due to normal temporal changes in the area and not due to effects from disposal material. During the 1995 survey, water clarity prevented collection of the 90% light transmittance sample, therefore only 50% and 10% samples were collected. During 1998, water clarity prevented the collection of the 90% light transmittance sample at three stations.

4.2 Particle Size Analysis

During both the 1995 survey and the 1998 survey, sediment at all stations was predominantly sand (Figure 3). Overall there was little change in sediment particle size outside the site boundaries. There was an increase in sand inside the site particularly at station 4.

In 1995 stations 2 and 7 bordering the site were greater than 90 percent sand. Stations 1, 3, 6, 8, 10, 11, and 12 outside the site were greater than 90 percent sand. In 1998 stations 2, 4, 5, and 7, inside and bordering the site were greater than 90 percent sand and stations 3, 6, 7, 11, and 12 outside the site were greater than 90 percent sand. Station 4 in the middle of the site increased from 68 percent sand to 92 percent sand from 1995 to 1998, with a corresponding decrease in the gravel and silt/clay components (18 percent and 5 percent respectively). Station 5 bordering the site increased from 87 percent to 96 percent sand. As stated earlier, stations 8 and 10 were moved to different locations between the two surveys and as a result had a change (decrease) in the percentage of sand of 7 and 15 percent respectively. Station 9 had a 7 percent decrease in sand with a corresponding increase in silts and clays, as well as gravel.

4.3 Metals

There was very little change in the chemical characteristics of the sediments between the 1995 and the 1998 survey. The vast majority of chemical constituents were either below laboratory analytical detection limits or were at very low concentrations. Metal to aluminum ratios were utilized to determine if some of the metal concentrations found at the Jacksonville ODMDS could be considered to be within normal ranges (Figures 4 and 5). When comparing the metal to aluminum ratios, the concentrations of lead (23 mg/kg), copper (59 mg/kg) and zinc(140 mg/kg) at station 4 were elevated above background levels in the 1995 survey (Windom 1990), but with the exception of zinc, were below analytical detection limits in 1998. Lead, as well as nickel was only found at station 4 in 1995. The concentrations of copper and zinc at station 4 during the 1995 survey were above the US-EPA R4 toxicity screening values (US-EPA, 1995) for sediment, (copper - 18.7 mg/kg, zinc - 124 mg/kg). Zinc concentrations were still above normal in 1998 at station 4 (25 mg/kg) as well as station 10 (32 mg/kg), but were well below the R4 screening values. As stated earlier, station 10 was located within the disposal area in 1998 and outside the disposal area in 1995 (Figures 1 and 2). The use of metals to aluminum ratios is for general comparison only, as Windom utilized a “total digestion” analytical method in the development of his curves while the SESD laboratory utilizes a “total recoverable” method for their analysis. Theoretically EPA’s method should recover less aluminum than the total digestion method, resulting in an abnormally high ratio when compared against Windom's regional curves. Since almost all of the metals concentrations actually fall well within the curves, this indicates that there is actually a pretty good correlation between the two methods. If the total digestion method were utilized, then the ratios might actually be closer to the lower 95 percentile of the curve.

Figure 3 - Jacksonville ODMDS
Particle Size Distribution, 1995 vs 1998

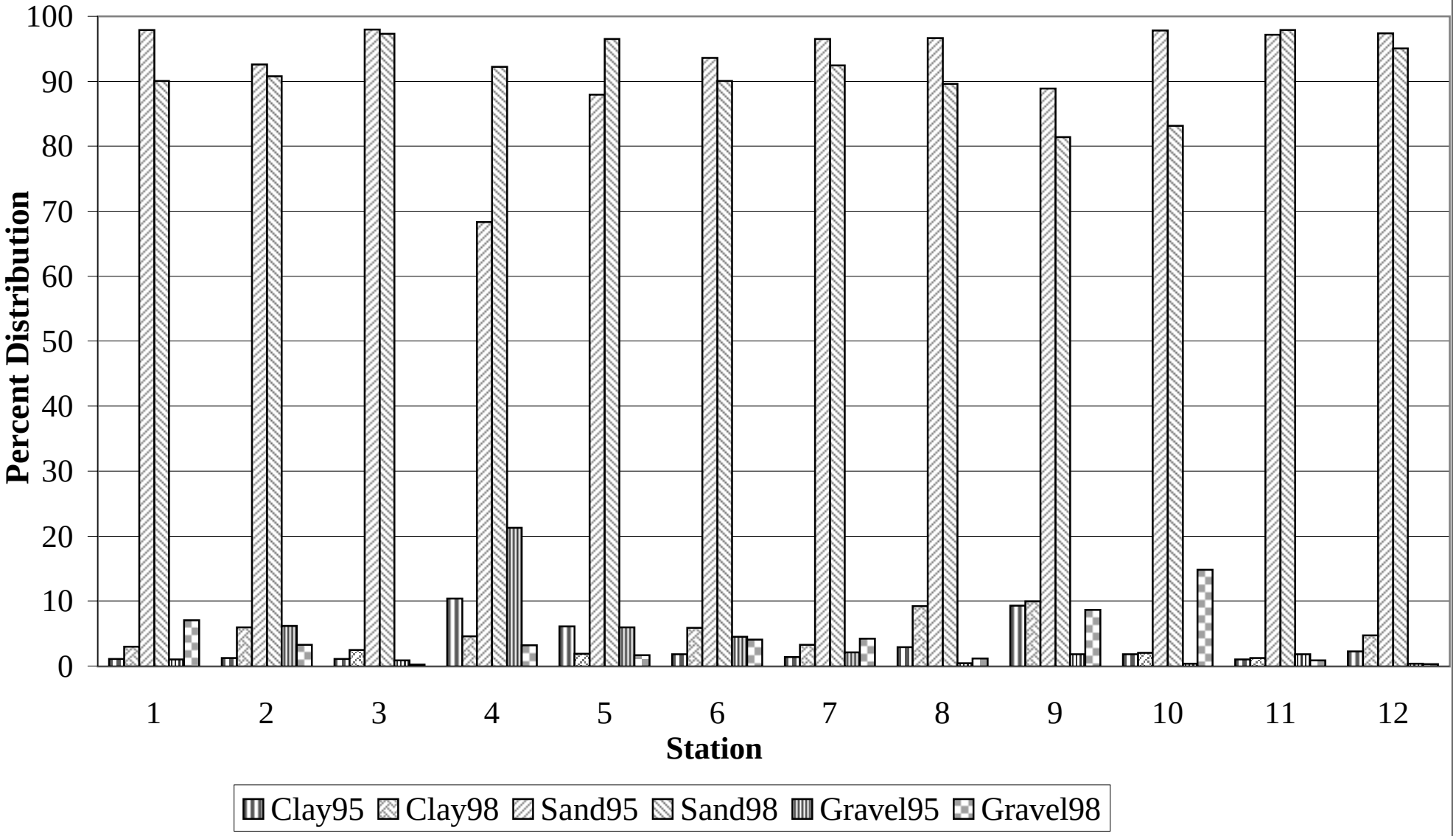
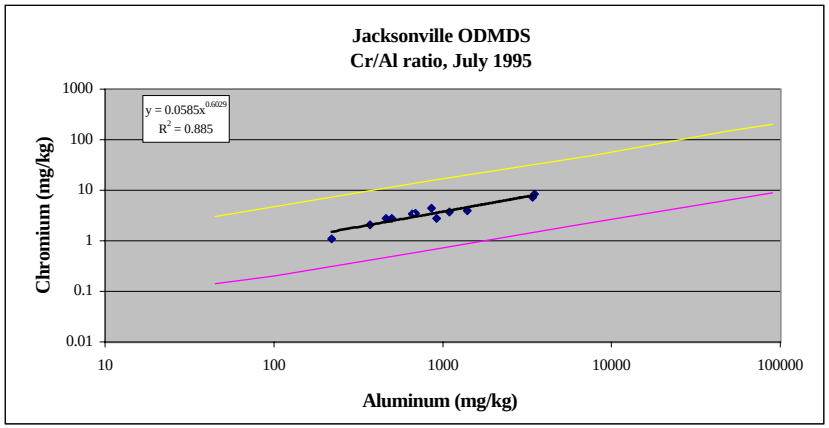
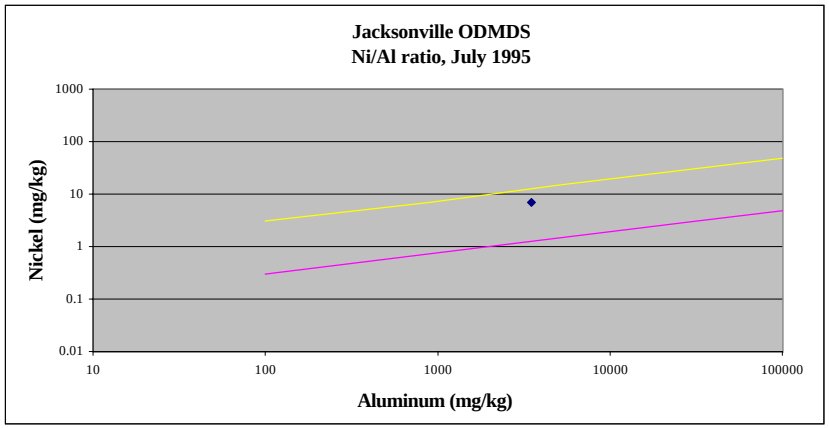
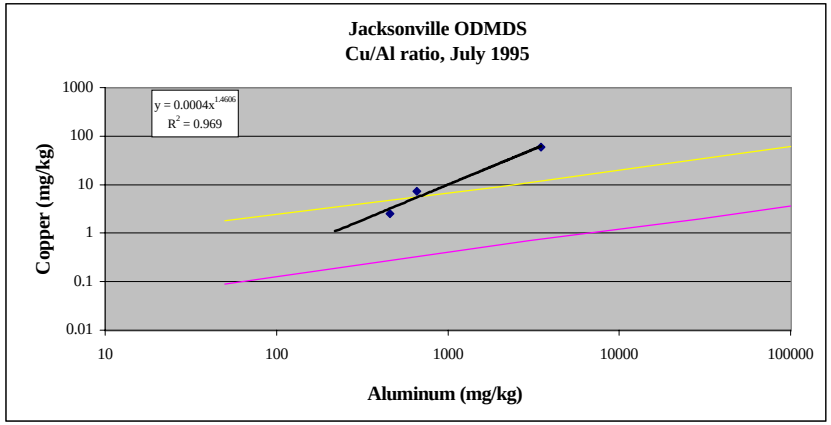
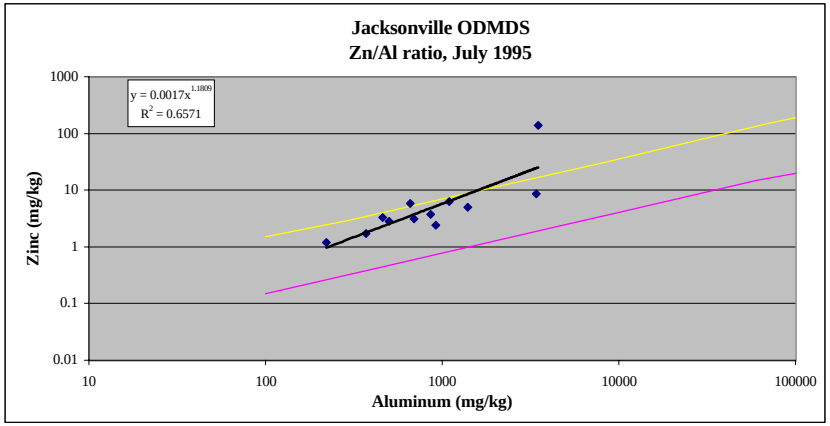


FIG 4 - METALS TO ALUMINUM RATIOS - JACKSONVILLE ODMDS JULY 1995









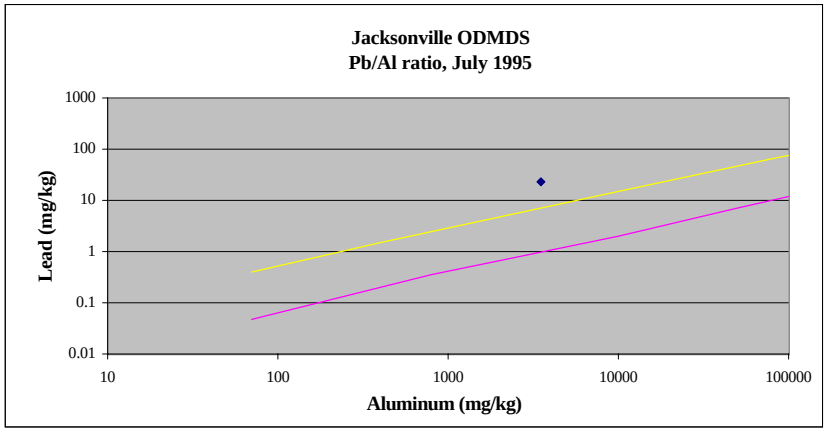
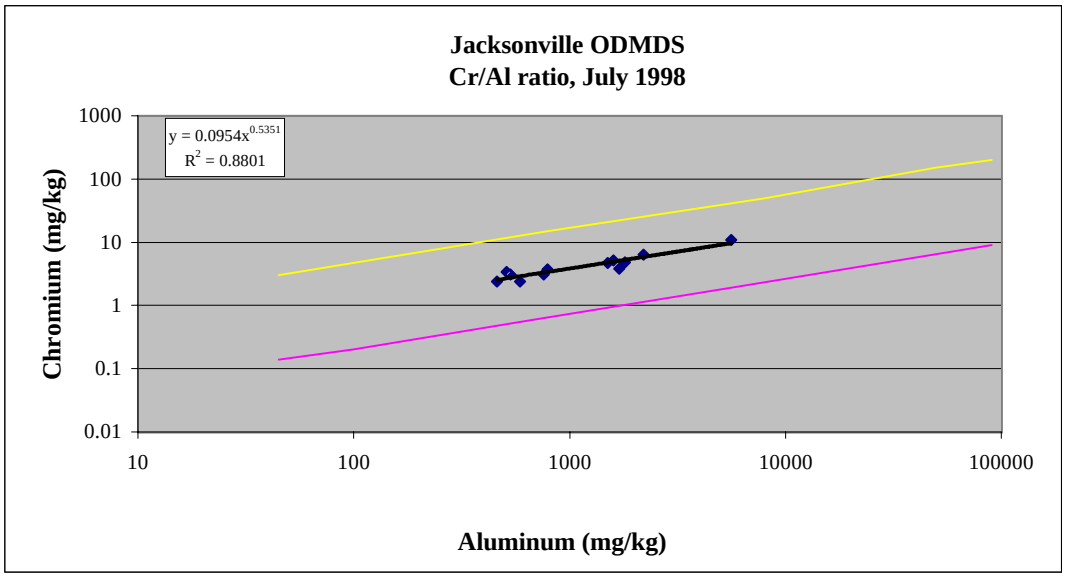
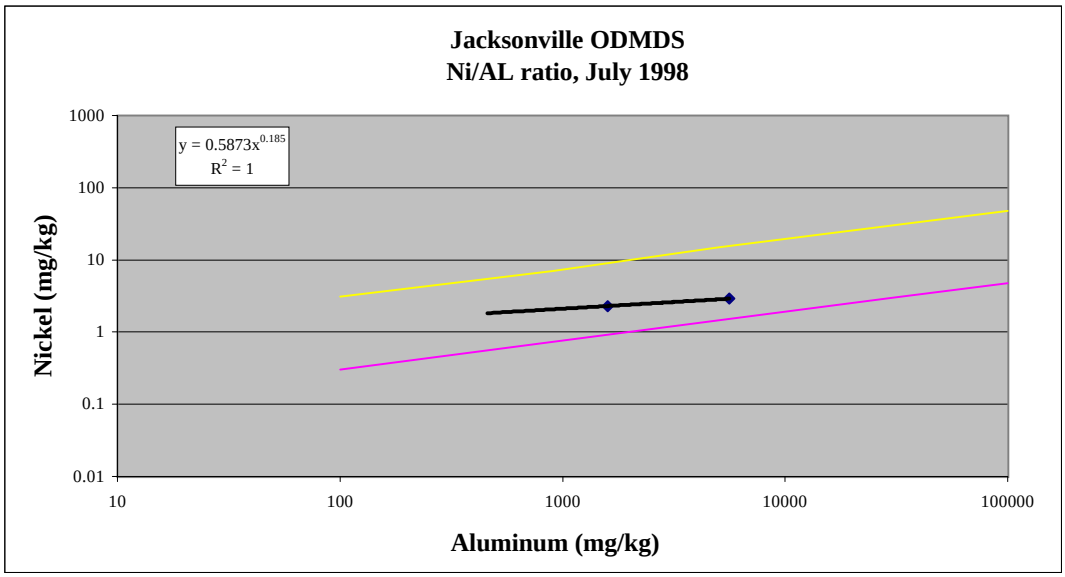
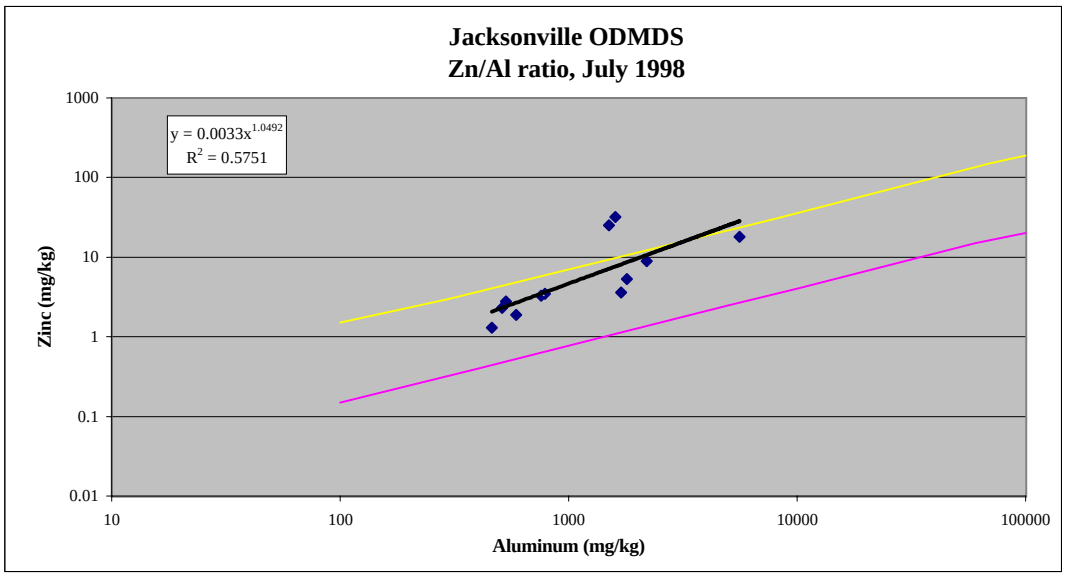


FIG. 5 - METALS TO ALUMINUM RATIOS
JACKSONVILLE ODMDS JULY 1998







4.4 Nutrients

Nutrient levels in sediment were very low or below analytical detection limits between the two studies. Total Kjeldahl Nitrogen (TKN) was not analyzed for during the 1995 study. TKN was present at four stations (2, 6, 9, and 12) in the 1998 study. Total phosphorus levels ranged from 83 mg/l to 1300 mg/l in 1995 and from 110 mg/l to1500 mg/l in 1998, showing very little change between the two surveys. Station 6 had the lowest concentrations of phosphorus on both surveys. The concentrations at other stations showed no discernable pattern, with similar numbers both inside and outside the site.

Nutrient analysis in the water column was not performed in the 1995 survey because it typically has never indicated the presence of elevated nutrients. A standard nutrient scan was conducted in the 1998 study. Ammonia, nitrate-nitrite nitrogen and total phosphorus were all below analytical detection limits. Total Kjeldahl nitrogen was present at all stations, but at very low concentrations.

4.5 Extractable organics

Several estimated values for miscellaneous extractable organics were reported during the 1995 survey, but only one estimated miscellaneous value was reported from the 1998 survey (Appendix B). These compounds were all flagged with a "JN" designation. The "J" indicates that the values reported are estimated values and may not be correct. The "N" designation indicates that there is "presumptive evidence that the material may be present" or is only "tentatively identified". Since none of the compounds identified in 1995 were present in 1998 and considering the tentative identification of the compounds, these compounds can be considered insignificant.

4.6 Volatile Organics

Nearly all compounds during both the 1995 and 1998 surveys were reported to be below analytical detection limits (Appendix C). In the 1995 survey acetone was found to be present in several samples. The QA officer that was onboard during the survey attributed the contamination to permanent marking pens that were utilized during the labeling process. In the 1998 survey, xylene was present in two samples. There were several other compounds that were reported as "J" and "JN" values (Appendix C). Most of these compounds showed up in the field blanks as well as the sediment samples. These values were attributed to contamination, this time from a cleaning aerosol that was being utilized by one of the ship's crew. The aerosol was pulled into the ventilation ducts onboard the OSV Anderson and thus into the processing lab during sample processing. As with the extractable organics, the "J" and "N" values for these compounds cast doubt as to the actual presence and quantity of the compounds indicated.

4.7 Sediment Mapping

In April 1997 CAIS conducted a sediment mapping survey in order to characterize the gamma isotope signatures and conduct an XRF screening of the sediments in and around the Jacksonville ODMDS site. The purpose of the survey was to delineate areas in and around the disposal area that potentially contained dredged material. The area surveyed included the disposal area as well as those areas .5-.75 NM east, west and south of the disposal area. The area north of the disposal area was not surveyed due to scattered debris on the seafloor.

The results of this survey were utilized in selecting station locations that would attempt to target areas containing dredged material as well as those areas where little or no dredged material was indicated.

The highest levels of gamma activity, specifically ^{214}Bi were located in the center of the disposal area (stations 4 and 10) as well as the southeast corner, just outside the disposal area (station 9). Depth contours also indicated a pile in the center of the site, indicating that this was most likely the dredged spoil pile.

Metals analysis conducted with XRF indicated higher metals concentrations on the eastern edge of the disposal area as well as an area south of the disposal area. Stations 5 and 12 were chosen from this information. The higher metals concentrations are generally an indication of finer particle sized sediments, which in turn normally have higher concentrations of other contaminants (if present).

The survey indicated primarily coarse grained sediments in the center of the disposal area, spreading to the southwest and to the southeast of the disposal area.

Stations 1, 2, 3, 6, 8 and 11 were chosen as areas where there was no apparent dredged material based upon the sediment mapping. Stations 4, 5, 7, 9, 10 were chosen as areas to sample because they were the areas that apparently contained dredged material based upon the sediment mapping survey. Station 12 was chosen to fall within an area thought to be fine sediment. It was primarily fine sand, but probably not dredged material.

4.8 Macroinvertebrates (Vittor and Assoc., 1999)

For a complete report of the macroinvertebrate assemblages, see the report Jacksonville, Florida 1998 ODMDS Benthic Community Assessment (Vittor and Associates, Inc., 1999). In general taxa were very diverse and evenly distributed both inside and outside the site with 8,214 organisms representing 446 taxa found in 1995 and 7,861 organisms, representing 434 taxa found in 1998. In both 1995 and 1998, all stations were extremely diverse with and equitable distribution of taxa relative to other benthic infaunal assemblages in the region. In terms of both number of individuals and number of species, polychaetes were the most abundant taxa in both

1995 and 1998. The polychaete, polygordiidae, the dominate Family in both the disposal site and reference areas in 1995, comprised less than one percent of the taxa in 1998. In 1998, another polychaete, spionidae was dominate in the disposal area and a gastropod, scaphandridae was dominant in the reference area. Although no taxa represented more than nine percent of species in 1995 or more than six percent of species in 1998. With more than 120 Families identified, the high diversity of families and absence of clear dominance by one or more Families makes interpretation of shifts in assemblage problematic. Changes are most likely due to natural variations in community structure. When taxa data for the disposal and reference areas for each year were combined, there was no significant differences between the number and density of taxa within the disposal area, but number and density increased significantly at reference stations. Community indices showed considerable uniformity between stations during both studies. Due to the uniformity, there was no predictable pattern between stations inside or outside the disposal area during either the 1995 or 1998 study. Station 4 within the disposal site had a significant decrease in both taxa density and the total number of taxa in 1998 as compared to 1995. This is most probably due to the shift in particle size to a more sandy substrate. As stated earlier, stations 8 and 10 were both moved between the 1995 survey and the 1998 survey. Therefore references in the benthic report to significant changes in these stations between studies can be disregarded. Taxa at the reference stations (stations outside the disposal site) 1, 6, and 12 were significantly higher in 1998 as compared to 1995, but stations 2, 5, and 7 bordering the site showed no significant changes from 1995 to 1998.

5.0 Conclusions

With the exception of a shift in particle size to sand from silts and clays inside the site, and thus a shift in the numbers and types of macroinvertebrates at the particular stations where the most shift in particle size occurred, there was very little change overall at the site. There were only a couple of stations with significant changes in macroinvertebrates due to the above mentioned shift in particle size. The remainder of the stations showed little change other than natural variation and shifts that one would expect with natural sediment movement. Chemically there was very little change in the site from the 1995 survey to the 1998 survey. In 1998, zinc at stations 4 and 10 inside the disposal area were elevated, (25 and 32 mg/kg respectively), compared to the surrounding stations, but were much lower than value from station 4, (140 mg/kg) in 1995. The values were well below EPA Region 4's sediment toxicity screening value for zinc of 124 mg/kg.

TABLE 1

JACKSONVILLE ODMDS

1995 SITE AND STATION LOCATIONS

SITE/STATION #	LATITUDE	LONGITUDE
NW CORNER	30E21.50'	81E18.57'
NE CORNER	30E21.50'	81E17.43'
SE CORNER	30E20.50'	81E17.43'
SW CORNER	30E20.50'	81E18.57'
1	30E 21.83'	81E 18.19'
2	30E 21.50'	81E 17.81'
3	30E 21.00'	81E 18.95'
4	30E 20.90'	81E 18.05'
5	30E 21.00'	81E 17.43'
6	30E 21.00'	81E 17.05'
7	30E 20.75'	81E 18.57'
8	30E 20.40'	81E 18.90'
9	30E 20.35'	81E 17.20'
10	30E 20.17'	81E 17.43'
11	30E 20.17'	81E 18.57'
12	30E 20.00'	81E 17.90'

TABLE 2

JACKSONVILLE ODMDS

1998 SITE AND STATION LOCATIONS

SITE/STATION #	LATITUDE	LONGITUDE
NW CORNER	30E21.50'	81E18.57'
NE CORNER	30E21.50'	81E17.43'
SE CORNER	30E20.50'	81E17.43'
SW CORNER	30E20.50'	81E18.57'
1	30E 21.83'	81E 18.19'
2	30E 21.50'	81E 17.81'
3	30E 21.00'	81E 18.95'
4	30E 20.90'	81E 18.05'
5	30E 21.00'	81E 17.43'
6	30E 21.00'	81E 17.05'
7	30E 20.75'	81E 18.57'
8	30E 21.493'	81E 18.636'
9	30E 20.35'	81E 17.20'
10	30E 21.178'	81E 18.219'
11	30E 20.17'	81E 18.57'
12	30E 20.00'	81E 17.90'

6.0 REFERENCES

CAIS. 1995. Postdisposal Areal Mapping of Sediment Chemistry at the Jacksonville, Florida ODMDS. Center for Applied Isotope Studies. University of Georgia. Athens, GA.

CAIS. 1997 Postdisposal Areal Mapping of Sediment Chemistry at the Jacksonville, Florida ODMDS. Center for Applied Isotope Studies. University of Georgia. Athens, GA.

Dennison, J.M. and W.H. Hay. 1967. Estimating the needed sampling area for subaquatic ecologic studies. J. Paleont. 41: 706-708

USEPA. 1995. Ecological Screening Values. Table 3, Sediment Screening Values. Ecological Risk Assessment Bulletin. US Environmental Protection Agency, Region 4, Waste Management Division, Atlanta, GA.

USEPA. 1996. Environmental Investigations Standard Operating Procedures and Quality Assurance Manual. US Environmental Protection Agency, Region 4. Athens, GA.

USEPA. 1998. Draft Standard Operation Procedures Ecological Assessment Branch. US Environmental Protection Agency, Region 4. Athens, GA.

Vittor and Associates, 1999. Jacksonville, Florida 1998 ODMDS Benthic Community Assessment.

Windom, L. Herbert, Steven J. Schropp. 1987. A Guide to the Interpretation of Metal Concentrations in Estuarine Sediments. Florida Department of Environmental Regulation.

Windom L. H., et al. 1989. Natural Trace Metal Concentrations in Estuarine and Coastal Marine Sediments of the Southeastern United States. Environmental Science and Technology, Vol. 23, p. 314-320.

7.0 APPENDICES

APPENDIX A:	METALS IN SEDIMENT
APPENDIX B:	EXTRACTABLE ORGANICS IN SEDIMENT
APPENDIX C:	VOLATILE ORGANICS IN SEDIMENT
APPENDIX D:	NUTRIENTS IN SEDIMENT
APPENDIX E:	NUTRIENTS IN WATER (1998 SURVEY ONLY)
APPENDIX F:	PARTICLE SIZE ANALYSIS
APPENDIX G:	PHYSICOCHEMICAL (CTD) PROFILES
APPENDIX H:	CHLOROPHYLL a

APPENDIX A
METALS ANALYSIS

APPENDIX A: JACKSONVILLE ODMDS, JULY 1995 - SEDIMENT METALS SCAN (mg/kg)

STA	DATE	TIME	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER
1	07/19/95	1417	370	3.0 U	3.0 U	2.7	0.5 U	0.5 U	10000	2.1	1.0 U	1.0 U
2	07/19/95	1330	220	6.0 U	6.0 U	3.2	1.0 U	1.0 U	23000	1.1	2.0 U	2.0 U
3	07/20/95	1026	500	6.0 U	6.0 U	2.2	1.0 U	1.0 U	19000	2.8	2.0 U	2.0 U
4	07/19/95	1619	3500	9.0 U	9.0 U	9.2	1.5 U	1.5 U	38000	8.4	3.0 U	59.0
5	07/19/95	1226	1400	9.0 U	9.0 U	4.1	1.5 U	1.5 U	36000	3.9	3.0 U	3.0 U
6	07/19/95	1127	920	3.0 U	3.0 U	2.5	0.5 U	0.5 U	11000	2.8	1.0 U	1.0 U
7	07/19/95	1510	660	3.0 U	3.0 U	3.7	0.5 U	0.5 U	14000	3.4	1.0 U	7.4
8	07/20/95	922	860	3.0 U	3.0 U	3.2	0.5 U	0.5 U	11000	4.4	1.0 U	1.0 U
9	07/19/95	1020	3400	6.0 U	6.0 U	5.8	1.0 U	1.0 U	30000	7.2	2.0 U	2.0 U
10	07/19/95	913	690	3.0 U	4.0 U	2.9	0.5 U	0.5 U	14000	3.5	1.0 U	1.0 U
11	07/20/95	839	460	3.0 U	3.0 U	2.4	0.5 U	0.5 U	10000	2.8	1.0 U	1.0 U
12	07/19/95	825	1100	3.0 U	3.5 U	3.5	0.5 U	0.5 U	15000	3.7	1.0 U	2.5

STA	DATE	TIME	IRON	LEAD	MAGNESIUM	MANGANESE	MERCURY	MOLYBDENUM	NICKEL	POTASSIUM	SELENIUM	SILVER
1	07/19/95	1417	780	4.0 U	710	9.3	0.05 U	1.0 U	2.0 U	200 U	4.0 U	1.0 U
2	07/19/95	1330	650	8.0 U	700	8.3	0.05 U	2.0 U	4.0 U	400 U	8.0 U	2.0 U
3	07/20/95	1026	1600	8.0 U	1100	12	0.05 U	2.0 U	4.0 U	400 U	8.0 U	2.0 U
4	07/19/95	1619	5400	23.0	4200	48	0.05 U	3.0 U	6.9	600 U	18.0 U	3.0 U
5	07/19/95	1226	1800	12.0 U	2200	23	0.05 U	3.0 U	6.0 U	600 U	12.0 U	3.0 U
6	07/19/95	1127	960	4.0 U	1200	10	0.05 U	1.0 U	2.0 U	200 U	4.0 U	1.0 U
7	07/19/95	1510	1300	4.0 U	1200	14	0.05 U	1.0 U	2.0 U	200 U	4.0 U	1.0 U
8	07/20/95	922	1500	4.0 U	1100	21	0.05 U	1.0 U	2.0 U	200 U	4.0 U	1.0 U
9	07/19/95	1020	3200	8.0 U	2500	40	0.05 U	2.0 U	4.0 U	400 U	8.0 U	2.0 U
10	07/19/95	913	1100	4.0 U	1000	16	0.05 U	1.0 U	2.0 U	270	4.0 U	1.0 U
11	07/20/95	839	1300	4.0 U	960	14	0.05 U	1.0 U	2.0 U	200 U	4.0 U	1.0 U
12	07/19/95	825	1600	4.0 U	1400	24	0.05 U	1.0 U	2.0 U	210	4.0 U	1.0 U

STA	DATE	TIME	SODIUM	STRONTIUM	TELLURIUM	THALLIUM	TIN	TITANIUM	VANADIUM	YTTRIUM	ZINC
1	07/19/95	1417	3700	210	5.0 U	10 U	3.5 U	34	1.2	5.7	1.7
2	07/19/95	1330	2500	120	10.0 U	20 U	5.0 U	6.6	1.1	1.6	1.2
3	07/20/95	1026	3200	98	10.0 U	20 U	5.0 U	15	2.7	2.8	2.8
4	07/19/95	1619	7000	140	15.0 U	30 U	16.0 U	74	8.2	4.5	140
5	07/19/95	1226	4200	180	15.0 U	30 U	7.5 U	42	4.2	5.3	5.0
6	07/19/95	1127	3000	57	5.0 U	10 U	3.0 U	27	3.2	2.6	2.4
7	07/19/95	1510	3400	67	5.0 U	10 U	3.0 U	46	3.7	4.9	5.8
8	07/20/95	922	2600	67	5.0 U	10 U	3.5 U	56	2.9	9.0	3.7
9	07/19/95	1020	4700	160	10.0 U	20 U	5.0 U	71	7.9	5.5	8.5
10	07/19/95	913	3200	85	5.0 U	10 U	4.0 U	45	2.7	7.1	3.1
11	07/20/95	839	2500	59	5.0 U	10 U	3.5 U	40	2.2	5.8	3.3
12	07/19/95	825	3700	94	5.0 U	10 U	4.0 U	67	3.3	6.0	6.3

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.

N-Presumptive evidence of presence of material.

NR-Not Reported

K-Actual value is known to be less than value given.

L-Actual value is known to be greater than value given.

U-Material was analyzed for but not detected.

R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.

C-Confirmed by GCMS.

1.When no value is reported, see chlordane constituents.

2.Constituents or metabolites of technical chlordane.

APPENDIX A: JACKSONVILLE ODMDS, JULY 1998 - SEDIMENT METALS SCAN (mg/kg)

STA	DATE	TIME	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER
1	07/20/98	900	590	4 U	7.5 U	4.1	0.5 U	0.5 U	39000	2.4	1 U	1.5 U
2	07/20/98	1000	1700	4 U	7.5 U	4.2	0.5 U	0.5 U	33000	3.8	1 U	1.5 U
3	07/20/98	1105	790	4 U	7.5 U	3.1	0.5 U	0.5 U	15000	3.7	1 U	1.5 U
4	07/20/98	1610	1500	4 U	7.5 U	5.2	0.5 U	0.5 U	26000	4.7	1 U	8 U
5	07/21/98	916	460	4 U	7.5 U	2.1	0.5 U	0.5 U	24000	2.4	1 U	1.5 U
6	07/21/98	825	1800	4 U	7.5 U	3.5	0.5 U	0.5 U	21000	4.8	1 U	1.5 U
7	07/22/98	906	530	4 U	7.5 U	2.8	0.5 U	0.5 U	21000	3.1	1 U	1.5 U
8	07/20/98	1445	760	4 U	7.5 U	3.1	0.5 U	0.5 U	30000	3.1	1 U	1.5 U
9	07/21/98	1035	5600	4 U	7.5 U	8.3	0.5 U	0.5 U	32000	11	2.7	1.5 U
10	07/21/98	1545	1600	4 U	7.5 U	7.7	0.5 U	0.5 U	47000	5.2	1 U	8 U
11	07/22/98	815	510	4 U	7.5 U	2.5	0.5 U	0.5 U	8200	3.4	1 U	1.5 U
12	07/21/98	1445	2200	4 U	8 U	5.2	0.5 U	0.5 U	18000	6.4	1 U	3.5 U
QA4	07/20/98	1610	1900	4 U	7.5 U	5.6	0.5 U	0.5 U	25000	5.1	1 U	17 J

STA	DATE	TIME	IRON	LEAD	MAGNESIUM	MANGANESE	MERCURY	MOLYBDENUM	NICKEL	POTASSIUM	SELENIUM	SILVER
1	07/20/98	900	1300	4 U	1300	15	0.05 U	1 U	2 U	240	14 U	1 U
2	07/20/98	1000	1800	4 U	1200	26	0.05 U	1 U	2 U	330	14 U	1 U
3	07/20/98	1105	1700	4 U	1500	25	0.05 U	1 U	2 U	340	14 U	1 U
4	07/20/98	1610	1700	4 U	1900	26	0.05 U	1.2	2 U	380	14 U	1 U
5	07/21/98	916	680	4 U	2600	16	0.05 U	1 U	2 U	210	14 U	1 U
6	07/21/98	825	1800	4 U	2700	23	0.05 U	1 U	2 U	410	14 U	1 U
7	07/22/98	906	1600	4 U	1200	17	0.05 U	1 U	2 U	250	14 U	1 U
8	07/20/98	1445	2000	4 U	1900	20	0.05 U	1 U	2 U	360	14 U	1 U
9	07/21/98	1035	4500	4 U	2500	55	0.05 U	1 U	2.9	700	14 U	1 U
10	07/21/98	1545	3400	4 U	4600	44	0.05 U	1 U	2.3	410	14 U	1 U
11	07/22/98	815	1100	4 U	970	18	0.05 U	1 U	2 U	230	14 U	1 U
12	07/21/98	1445	2500	4 U	1800	43	0.05 U	1 U	2 U	450	14 U	1 U
QA4	07/20/98	1610	2400	4 U	1700	44	0.05 U	1 U	2.1	390	14 U	1 U

STA	DATE	TIME	SODIUM	STRONTIUM	TELLURIUM	THALLIUM	TIN	TITANIUM	VANADIUM	YTTRIUM	ZINC
1	07/20/98	900	3700	210	NA	10 U	NA	19	2.4	2.4	1.9
2	07/20/98	1000	3500	170	NA	10 U	NA	40	4	2.3	3.6
3	07/20/98	1105	5700	86	NA	10 U	NA	70	2.8	5.1	3.5
4	07/20/98	1610	4600	99	NA	10 U	NA	61	3.9	2.9	25
5	07/21/98	916	3500	88	NA	10 U	NA	20	2	2	1.3
6	07/21/98	825	3600	100	NA	10 U	NA	56	5	2.8	5.3
7	07/22/98	906	4400	100	NA	10 U	NA	57	2.3	3	2.8
8	07/20/98	1445	6400	150	NA	10 U	NA	25	3.1	2.6	3.3
9	07/21/98	1035	4000	200	NA	10 U	NA	180	12	7.2	18
10	07/21/98	1545	4400	170	NA	10 U	NA	52	4.6	3.2	32
11	07/22/98	815	3900	49	NA	10 U	NA	110	2.4	5.3	2.3
12	07/21/98	1445	4500	110	NA	16 U	NA	160	5.8	6.9	8.9
QA4	07/20/98	1610	3700	110	NA	10 U	NA	88	4.5	3.6	23

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.

N-Presumptive evidence of presence of material.

NR-Not Reported

K-Actual value is known to be less than value given.

L-Actual value is known to be greater than value given.

U-Material was analyzed for but not detected.

R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.

C-Confirmed by GCMS.

1.When no value is reported, see chlordane constituents.

2.Constituents or metabolites of technical chlordane.

APPENDIX B
EXTRACTABLE ORGANICS ANALYSIS

JACKSONVILLE ODMDS - JULY 1995
EXTRACTABLE ORGANICS ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 1 OF 2

STA	DATE	TIME	(3-AND/OR 4-)METHYLPHENOL		1,2,4-TRICHLOROBENZENE		2,2'-CHLOROISOPROPYLETHER		2,3,4,6-TETRACHLOROPHENOL		2,4,5-TRICHLOROPHENOL		2,4,6-TRICHLOROPHENOL		2,4-DICHLOROPHENOL		2,4-DIMETHYLPHENOL	
1	07/19/95	1417	500	U	500	U	500	U	500	U	500	U	500	U	500	U	500	U
3	07/20/95	1026	420	U	420	U	420	U	420	U	420	U	420	U	420	U	420	U
4	07/19/95	1619	690	U	690	U	690	U	690	U	690	U	690	U	690	U	690	U
6	07/19/95	1127	430	U	430	U	430	U	430	U	430	U	430	U	430	U	430	U
9	07/19/95	1020	520	U	520	U	520	U	520	U	520	U	520	U	520	U	520	U
12	07/19/95	825	440	U	440	U	440	U	440	U	440	U	440	U	440	U	440	U

STA	DATE	TIME	2,4-DINITROPHENOL		2,4-DINITROTOLUENE		2,6-DINITROTOLUENE		2-CHLORONAPHTHALENE		2-CHLOROPHENOL		2-METHYL-4,6-DINITROPHENOL		2-METHYLNAPHTHALENE	
1	07/19/95	1417	1000	U	500	U	500	U	500	U	500	U	1000	U	500	U
3	07/20/95	1026	830	U	420	U	420	U	420	U	420	U	830	U	420	U
4	07/19/95	1619	1400	U	690	U	690	U	690	U	690	U	1400	U	690	U
6	07/19/95	1127	850	U	430	U	430	U	430	U	430	U	850	U	430	U
9	07/19/95	1020	1000	U	520	U	520	U	520	U	520	U	1000	U	520	U
12	07/19/95	825	880	U	440	U	440	U	440	U	440	U	880	U	440	U

STA	DATE	TIME	2-METHYLPHENOL		2-NITROANILINE		2-NITROPHENOL		3,3'-DICHLOROBENZIDINE		3-NITROANILINE		4-BROMOPHENYL PHENYL ETHER		4-CHLORO-3-METHYLPHENOL	
1	07/19/95	1417	500	U	500	U	500	U	500	U	500	U	500	U	500	U
3	07/20/95	1026	420	U	420	U	420	U	420	U	420	U	420	U	420	U
4	07/19/95	1619	690	U	690	U	690	U	690	U	690	U	690	U	690	U
6	07/19/95	1127	430	U	430	U	430	U	430	U	430	U	430	U	430	U
9	07/19/95	1020	520	U	520	U	520	U	520	U	520	U	520	U	520	U
12	07/19/95	825	440	U	440	U	440	U	440	U	440	U	440	U	440	U

STA	DATE	TIME	4-CHLOROANILINE		4-CHLOROPHENYL PHENYL E		4-NITROANILINE		4-NITROPHENOL		ACENAPHTHENE		ACENAPHTHYLENE		ANTHRACENE	
1	07/19/95	1417	500	U	500	U	500	U	1000	U	500	U	500	U	500	U
3	07/20/95	1026	420	U	420	U	420	U	830	U	420	U	420	U	420	U
4	07/19/95	1619	690	U	690	U	690	U	1400	U	690	U	690	U	690	U
6	07/19/95	1127	430	U	430	U	430	U	850	U	430	U	430	U	430	U
9	07/19/95	1020	520	U	520	U	520	U	1000	U	520	U	520	U	520	U
12	07/19/95	825	440	U	440	U	440	U	880	U	440	U	440	U	440	U

STA	DATE	TIME	BENZO(A)ANTHRACENE		BENZO(B and or K)FLUORANT		BENZO(GHI)PERYLENE		BENZO-A-PYRENE		BENZYL BUTYL PHTHALATE		BIS(2-CHLOROETHOXY)METHANE		BIS(2-CHLOROETHYL) ETHER	
1	07/19/95	1417	500	U	500	U	500	U	500	U	500	U	500	U	500	U
3	07/20/95	1026	420	U	420	U	420	U	420	U	420	U	420	U	420	U
4	07/19/95	1619	690	U	690	U	690	U	690	U	690	U	690	U	690	U
6	07/19/95	1127	430	U	430	U	430	U	430	U	430	U	430	U	430	U
9	07/19/95	1020	520	U	520	U	520	U	520	U	520	U	520	U	520	U
12	07/19/95	825	440	U	440	U	440	U	440	U	440	U	440	U	440	U

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.

N-Presumptive evidence of presence of material.

NR-Not Reported

K-Actual value is known to be less than value given.

L-Actual value is known to be greater than value given.

U-Material was analyzed for but not detected. The number is the minimum quantitation limit.

R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.

C-Confirmed by GCMS.

1.When no value is reported, see chlordane constituents.

2.Constituents or metabolites of technical chlordane.

JACKSONVILLE ODMDS - JULY 1995
EXTRACTABLE ORGANICS ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 2 OF 2

STA	DATE	TIME	BIS(2-ETHYLHEXYL) PHTHALATE		CARBAZOLE		CHRYSENE		DIBENZO(A,H)ANTHRACENE		DIBENZOFURAN		DIETHYL PHTHALATE		DIMETHYL PHTHALATE	
1	07/19/95	1417	500	U	500	U	500	U	500	U	500	U	500	U	500	U
3	07/20/95	1026	420	U	420	U	420	U	420	U	420	U	420	U	420	U
4	07/19/95	1619	690	U	690	U	690	U	690	U	690	U	690	U	690	U
6	07/19/95	1127	430	U	430	U	430	U	430	U	430	U	430	U	430	U
9	07/19/95	1020	520	U	520	U	520	U	520	U	520	U	520	U	520	U
12	07/19/95	825	440	U	440	U	440	U	440	U	440	U	440	U	440	U

STA	DATE	TIME	DI-N-BUTYLPHTHALATE		DI-N-OCTYLPHTHALATE		FLUORANTHENE		FLUORENE		HEXACHLOROBENZENE (HCB)		HEXACHLOROBUTADIENE		HEXACHLOROCYCLOPENTADIENE (HCCP)	
1	07/19/95	1417	500	U	500	U	500	U	500	U	500	U	500	U	500	U
3	07/20/95	1026	420	U	420	U	420	U	420	U	420	U	420	U	420	U
4	07/19/95	1619	690	U	690	U	690	U	690	U	690	U	690	U	690	U
6	07/19/95	1127	430	U	430	U	430	U	430	U	430	U	430	U	430	U
9	07/19/95	1020	520	U	520	U	520	U	520	U	520	U	520	U	520	U
12	07/19/95	825	440	U	440	U	440	U	440	U	440	U	440	U	440	U

STA	DATE	TIME	HEXACHLOROETHANE		INDENO (1,2,3-CD) PYRENE		ISOPHORONE		NAPHTHALENE		NITROBENZENE		N-NITROSODI-N-PROPYLAMINE		N-NITROSODIPHENYLAMINE/DIPHENYLAMINE	
1	07/19/95	1417	500	U	500	U	500	U	500	U	500	U	500	U	500	U
3	07/20/95	1026	420	U	420	U	420	U	420	U	420	U	420	U	420	U
4	07/19/95	1619	690	U	690	U	690	U	690	U	690	U	690	U	690	U
6	07/19/95	1127	430	U	430	U	430	U	430	U	430	U	430	U	430	U
9	07/19/95	1020	520	U	520	U	520	U	520	U	520	U	520	U	520	U
12	07/19/95	825	440	U	440	U	440	U	440	U	440	U	440	U	440	U

STA	DATE	TIME	PENTACHLOROPHENOL		PHENANTHRENE		PHENOL		PYRENE		DIMETHYLHEPTANONE		ETHANEDIOL, MONOACEATE		HEXATHIEPANE	
1	07/19/95	1417	1000	U	500	U	500	U	500	U	7000	JN	9000	JN		
3	07/20/95	1026	830	U	420	U	420	U	420	U	7000	JN	6000	JN		
4	07/19/95	1619	1400	U	690	U	690	U	690	U	7000	JN	1000	JN		
6	07/19/95	1127	850	U	430	U	430	U	430	U	4000	JN				
9	07/19/95	1020	1000	U	520	U	520	U	520	U	10000	JN	3000	JN	600	JN
12	07/19/95	825	880	U	440	U	440	U	440	U	9000	JN	1000	JN	500	JN

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.
N-Presumptive evidence of presence of material.
NR-Not Reported
K-Actual value is known to be less than value given.
L-Actual value is known to be greater than value given.
U-Material was analyzed for but not detected. The number is the minimum quantitation limit.
R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.
C-Confirmed by GCMS.
1.When no value is reported, see chlordane constituents.
2.Constituents or metabolites of technical chlordane.

JACKSONVILLE ODMDS - JULY 1998
EXTRACTABLE ORGANICS ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 1 OF 3

STA	DATE	TIME	(3-AND/OR 4-)METHYLPHENOL		1,2,4-TRICHLOROBENZENE		2,3,4,6-TETRACHLOROPHENOL		2,4,5-TRICHLOROPHENOL		2,4,6-TRICHLOROPHENOL		2,4-DICHLOROPHENOL		2,4-DIMETHYLPHENOL		2,4-DINITROPHENOL	
1	07/20/98	900	380	U	380	U	380	U	380	U	380	U	380	U	380	U	760	U
2	07/20/98	1000	480	U	480	U	480	U	480	U	480	U	480	U	480	U	970	U
3	07/20/98	1105	380	U	380	U	380	U	380	U	380	U	380	U	380	U	760	U
4	07/20/98	1610	370	U	370	U	370	U	370	U	370	U	370	U	370	U	730	U
5	07/21/98	916	370	U	370	U	370	U	370	U	370	U	370	U	370	U	740	U
6	07/21/98	825	350	U	350	U	350	U	350	U	350	U	350	U	350	U	700	U
7	07/22/98	906	330	U	330	U	330	U	330	U	330	U	330	U	330	U	660	U
8	07/20/98	1445	390	U	390	U	390	U	390	U	390	U	390	U	390	U	780	U
9	07/21/98	1035	470	U	470	U	470	U	470	U	470	U	470	U	470	U	950	U
10	07/21/98	1545	360	U	360	U	360	U	360	U	360	U	360	U	360	U	730	U
11	07/22/98	815	350	U	350	U	350	U	350	U	350	U	350	U	350	U	710	U
12	07/21/98	1445	400	U	400	U	400	U	400	U	400	U	400	U	400	U	810	U
4QA	07/20/98	1610	350	U	350	U	350	U	350	U	350	U	350	U	350	U	700	U

STA	DATE	TIME	2,4-DINITROTOLUENE		2,6-DINITROTOLUENE		2-CHLORONAPHTHALENE		2-CHLOROPHENOL		2-METHYL-4,6-DINITROPHENOL		2-METHYLNAPHTHALENE		2-METHYLPHENOL	
1	07/20/98	900	380	U	380	U	380	U	380	U	760	U	380	U	380	U
2	07/20/98	1000	480	U	480	U	480	U	480	U	970	U	480	U	480	U
3	07/20/98	1105	380	U	380	U	380	U	380	U	760	U	380	U	380	U
4	07/20/98	1610	370	U	370	U	370	U	370	U	730	U	370	U	370	U
5	07/21/98	916	370	U	370	U	370	U	370	U	740	U	370	U	370	U
6	07/21/98	825	350	U	350	U	350	U	350	U	700	U	350	U	350	U
7	07/22/98	906	330	U	330	U	330	U	330	U	660	U	330	U	330	U
8	07/20/98	1445	390	U	390	U	390	U	390	U	780	U	390	U	390	U
9	07/21/98	1035	470	U	470	U	470	U	470	U	950	U	470	U	470	U
10	07/21/98	1545	360	U	360	U	360	U	360	U	730	U	360	U	360	U
11	07/22/98	815	350	U	350	U	350	U	350	U	710	U	350	U	350	U
12	07/21/98	1445	400	U	400	U	400	U	400	U	810	U	400	U	400	U
4QA	07/20/98	1610	350	U	350	U	350	U	350	U	700	U	350	U	350	U

STA	DATE	TIME	2-NITROANILINE		2-NITROPHENOL		3,3'-DICHLOROBENZIDINE		3-NITROANILINE		4-BROMOPHENYL PHENYL ETHER		4-CHLORO-3-METHYLPHENOL		4-CHLOROANILINE	
1	07/20/98	900	380	U	380	U	380	U	380	U	380	U	380	U	380	U
2	07/20/98	1000	480	U	480	U	480	U	480	U	480	U	480	U	480	U
3	07/20/98	1105	380	U	380	U	380	U	380	U	380	U	380	U	380	U
4	07/20/98	1610	370	U	370	U	370	U	370	U	370	U	370	U	370	U
5	07/21/98	916	370	U	370	U	370	U	370	U	370	U	370	U	370	U
6	07/21/98	825	350	U	350	U	350	U	350	U	350	U	350	U	350	U
7	07/22/98	906	330	U	330	U	330	U	330	U	330	U	330	U	330	U
8	07/20/98	1445	390	U	390	U	390	U	390	U	390	U	390	U	390	U
9	07/21/98	1035	470	U	470	U	470	U	470	U	470	U	470	U	470	U
10	07/21/98	1545	360	U	360	U	360	U	360	U	360	U	360	U	360	U
11	07/22/98	815	350	U	350	U	350	U	350	U	350	U	350	U	350	U
12	07/21/98	1445	400	U	400	U	400	U	400	U	400	U	400	U	400	U
4QA	07/20/98	1610	350	U	350	U	350	U	350	U	350	U	350	U	350	U

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.

N-Presumptive evidence of presence of material.

NR-Not Reported

K-Actual value is known to be less than value given.

L-Actual value is known to be greater than value given.

U-Material was analyzed for but not detected. The number is the minimum quantitation limit.

R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.

C-Confirmed by GCMS.

1.When no value is reported, see chlordane constituents.

2.Constituents or metabolites of technical chlordane.

JACKSONVILLE ODMDS - JULY 1998
EXTRACTABLE ORGANICS ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 2 OF 3

STA	DATE	TIME	4-CHLOROPHENYL PHENYL ETHER		4-NITROANILINE		4-NITROPHENOL		ACENAPHTHENE		ACENAPHTHYLENE		ANTHRACENE		BENZO(A)ANTHRACENE	
1	07/20/98	900	380	U	380	U	760	U	380	U	380	U	380	U	380	U
2	07/20/98	1000	480	U	480	U	970	U	480	U	480	U	480	U	480	U
3	07/20/98	1105	380	U	380	U	760	U	380	U	380	U	380	U	380	U
4	07/20/98	1610	370	U	370	U	730	U	370	U	370	U	370	U	370	U
5	07/21/98	916	370	U	370	U	740	U	370	U	370	U	370	U	370	U
6	07/21/98	825	350	U	350	U	700	U	350	U	350	U	350	U	350	U
7	07/22/98	906	330	U	330	U	660	U	330	U	330	U	330	U	330	U
8	07/20/98	1445	390	U	390	U	780	U	390	U	390	U	390	U	390	U
9	07/21/98	1035	470	U	470	U	950	U	470	U	470	U	470	U	470	U
10	07/21/98	1545	360	U	360	U	730	U	360	U	360	U	360	U	360	U
11	07/22/98	815	350	U	350	U	710	U	350	U	350	U	350	U	350	U
12	07/21/98	1445	400	U	400	U	810	U	400	U	400	U	400	U	400	U
4QA	07/20/98	1610	350	U	350	U	700	U	350	U	350	U	350	U	350	U

STA	DATE	TIME	BENZO(B)FLUORANTHENE		BENZO(GHI)PERYLENE		BENZO(K)FLUORANTHENE		BENZO-A-PYRENE		BENZYL BUTYL PHTHALATE		BIS(2-CHLOROETHOXY)METHANE		BIS(2-CHLOROETHYL) ETHER	
1	07/20/98	900	380	U	380	U	380	U	380	U	380	U	380	U	380	U
2	07/20/98	1000	480	U	480	U	480	U	480	U	480	U	480	U	480	U
3	07/20/98	1105	380	U	380	U	380	U	380	U	380	U	380	U	380	U
4	07/20/98	1610	370	U	370	U	370	U	370	U	370	U	370	U	370	U
5	07/21/98	916	370	U	370	U	370	U	370	U	370	U	370	U	370	U
6	07/21/98	825	350	U	350	U	350	U	350	U	350	U	350	U	350	U
7	07/22/98	906	330	U	330	U	330	U	330	U	330	U	330	U	330	U
8	07/20/98	1445	390	U	390	U	390	U	390	U	390	U	390	U	390	U
9	07/21/98	1035	470	U	470	U	470	U	470	U	470	U	470	U	470	U
10	07/21/98	1545	360	U	360	U	360	U	360	U	360	U	360	U	360	U
11	07/22/98	815	350	U	350	U	350	U	350	U	350	U	350	U	350	U
12	07/21/98	1445	400	U	400	U	400	U	400	U	400	U	400	U	400	U
4QA	07/20/98	1610	350	U	350	U	350	U	350	U	350	U	350	U	350	U

STA	DATE	TIME	BIS(2-CHLOROISOPROPYL) ETHER		BIS(2-ETHYLHEXYL) PHTHALATE		CARBAZOLE		CHRYSENE		DIBENZO(A,H)ANTHRACENE		DIBENZOFURAN		DIETHYL PHTHALATE	
1	07/20/98	900	380	U	380	U	380	U	380	U	380	U	380	U	380	U
2	07/20/98	1000	480	U	480	U	480	U	480	U	480	U	480	U	480	U
3	07/20/98	1105	380	U	380	U	380	U	380	U	380	U	380	U	380	U
4	07/20/98	1610	370	U	370	U	370	U	370	U	370	U	370	U	370	U
5	07/21/98	916	370	U	370	U	370	U	370	U	370	U	370	U	370	U
6	07/21/98	825	350	U	350	U	350	U	350	U	350	U	350	U	350	U
7	07/22/98	906	330	U	330	U	330	U	330	U	330	U	330	U	330	U
8	07/20/98	1445	390	U	390	U	390	U	390	U	390	U	390	U	390	U
9	07/21/98	1035	470	U	470	U	470	U	470	U	470	U	470	U	470	U
10	07/21/98	1545	360	U	360	U	360	U	360	U	360	U	360	U	360	U
11	07/22/98	815	350	U	350	U	350	U	350	U	350	U	350	U	350	U
12	07/21/98	1445	400	U	400	U	400	U	400	U	400	U	400	U	400	U
4QA	07/20/98	1610	350	U	350	U	350	U	350	U	350	U	350	U	350	U

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.
N-Presumptive evidence of presence of material.
NR-Not Reported
K-Actual value is known to be less than value given.
L-Actual value is known to be greater than value given.
U-Material was analyzed for but not detected. The number is the minimum quantitation limit.
R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.
C-Confirmed by GCMS.
1.When no value is reported, see chlordane constituents.
2.Constituents or metabolites of technical chlordane.

JACKSONVILLE ODMDS - JULY 1998
EXTRACTABLE ORGANICS ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 3 OF 3

STA	DATE	TIME	DIMETHYL PHTHALATE		DI-N-BUTYLPHTHALATE		DI-N-OCTYLPHTHALATE		FLUORANTHENE		FLUORENE		HEXACHLOROBENZENE (HCB)		HEXACHLOROBUTADIENE	
1	07/20/98	900	380	U	380	U	380	U	380	U	380	U	380	U	380	U
2	07/20/98	1000	480	U	480	U	480	U	480	U	480	U	480	U	480	U
3	07/20/98	1105	380	U	380	U	380	U	380	U	380	U	380	U	380	U
4	07/20/98	1610	370	U	370	U	370	U	370	U	370	U	370	U	370	U
5	07/21/98	916	370	U	370	U	370	U	370	U	370	U	370	U	370	U
6	07/21/98	825	350	U	350	U	350	U	350	U	350	U	350	U	350	U
7	07/22/98	906	330	U	330	U	330	U	330	U	330	U	330	U	330	U
8	07/20/98	1445	390	U	390	U	390	U	390	U	390	U	390	U	390	U
9	07/21/98	1035	470	U	470	U	470	U	470	U	470	U	470	U	470	U
10	07/21/98	1545	360	U	360	U	360	U	360	U	360	U	360	U	360	U
11	07/22/98	815	350	U	350	U	350	U	350	U	350	U	350	U	350	U
12	07/21/98	1445	400	U	400	U	400	U	400	U	400	U	400	U	400	U
4QA	07/20/98	1610	350	U	350	U	350	U	350	U	350	U	350	U	350	U

STA	DATE	TIME	HEXACHLOROCYCLOPENTADIENE (HCCP)		HEXACHLOROETHANE		INDENO (1,2,3-CD) PYRENE		ISOPHORONE		NAPHTHALENE		NITROBENZENE		N-NITROSODI-N-PROPYLAMINE	
1	07/20/98	900	380	U	380	U	380	U	380	U	380	U	380	U	380	U
2	07/20/98	1000	480	U	480	U	480	U	480	U	480	U	480	U	480	U
3	07/20/98	1105	380	U	380	U	380	U	380	U	380	U	380	U	380	U
4	07/20/98	1610	370	U	370	U	370	U	370	U	370	U	370	U	370	U
5	07/21/98	916	370	U	370	U	370	U	370	U	370	U	370	U	370	U
6	07/21/98	825	350	U	350	U	350	U	350	U	350	U	350	U	350	U
7	07/22/98	906	330	U	330	U	330	U	330	U	330	U	330	U	330	U
8	07/20/98	1445	390	U	390	U	390	U	390	U	390	U	390	U	390	U
9	07/21/98	1035	470	U	470	U	470	U	470	U	470	U	470	U	470	U
10	07/21/98	1545	360	U	360	U	360	U	360	U	360	U	360	U	360	U
11	07/22/98	815	350	U	350	U	350	U	350	U	350	U	350	U	350	U
12	07/21/98	1445	400	U	400	U	400	U	400	U	400	U	400	U	400	U
4QA	07/20/98	1610	350	U	350	U	350	U	350	U	350	U	350	U	350	U

STA	DATE	TIME	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE		PENTACHLOROPHENOL		PHENANTHRENE		PHENOL		PYRENE		HEXADECANOIC ACID	
1	07/20/98	900	380	U	760	U	380	U	380	U	380	U		
2	07/20/98	1000	480	U	970	U	480	U	480	U	480	U		
3	07/20/98	1105	380	U	760	U	380	U	380	U	380	U		
4	07/20/98	1610	370	U	730	U	370	U	370	U	370	U		
5	07/21/98	916	370	U	740	U	370	U	370	U	370	U		
6	07/21/98	825	350	U	700	U	350	U	350	U	350	U	400	JN
7	07/22/98	906	330	U	660	U	330	U	330	U	330	U		
8	07/20/98	1445	390	U	780	U	390	U	390	U	390	U		
9	07/21/98	1035	470	U	950	U	470	U	470	U	470	U		
10	07/21/98	1545	360	U	730	U	360	U	360	U	360	U		
11	07/22/98	815	350	U	710	U	350	U	350	U	350	U		
12	07/21/98	1445	400	U	810	U	400	U	400	U	400	U		
4QA	07/20/98	1610	350	U	700	U	350	U	350	U	350	U		

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.
N-Presumptive evidence of presence of material.
NR-Not Reported
K-Actual value is known to be less than value given.
L-Actual value is known to be greater than value given.
U-Material was analyzed for but not detected. The number is the minimum quantitation limit.
R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.
C-Confirmed by GCMS.
1.When no value is reported, see chlordane constituents.
2.Constituents or metabolites of technical chlordane.

APPENDIX C
VOLATILE ORGANICS ANALYSIS

JACKSONVILLE ODMDS - JULY 1995
VOLATILES ORGANIC ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 1 OF 2

STA	DATE	TME	(M- AND/OR P-)XYLENE		1,1,1,2-TETRACHLOROETHANE		1,1,1-TRICHLOROETHANE		1,1,2,2-TETRACHLOROETHANE		1,1,2-TRICHLOROETHANE	
1	07/19/95	1417	120	U	120	U	120	U	120	U	120	U
3	07/20/95	1026	90	J	90	U	90	U	90	U	90	U
4	07/19/95	1619	150	U	150	U	150	U	150	U	150	U
6	07/19/95	1127	120	U	120	U	120	U	120	U	120	U
9	07/19/95	1020	140	U	140	U	140	U	140	U	140	U
12	07/19/95	825	170	U	170	U	170	U	170	U	170	U

STA	DATE	TME	1,1-DICHLOROETHANE		1,1-DICHLOROETHENE (1,1-DICHLOROETHYLENE)		1,1-DICHLOROPROPENE		1,2,3-TRICHLOROPROPANE		1,2-DICHLOROBENZENE	
1	07/19/95	1417	120	U	120	U	120	U	120	U	120	U
3	07/20/95	1026	90	U	90	U	90	U	90	U	90	U
4	07/19/95	1619	150	U	150	U	150	U	150	U	150	U
6	07/19/95	1127	120	U	120	U	120	U	120	U	120	U
9	07/19/95	1020	140	U	140	U	140	U	140	U	140	U
12	07/19/95	825	170	U	170	U	170	U	170	U	170	U

STA	DATE	TME	1,2-DICHLOROETHANE		1,2-DICHLOROPROPANE		1,3-DICHLOROBENZENE		1,3-DICHLOROPROPANE		1,4-DICHLOROBENZENE	
1	07/19/95	1417	120	U	120	U	120	U	120	U	120	U
3	07/20/95	1026	90	U	90	U	90	U	90	U	90	U
4	07/19/95	1619	150	U	150	U	150	U	150	U	150	U
6	07/19/95	1127	120	U	120	U	120	U	120	U	120	U
9	07/19/95	1020	140	U	140	U	140	U	140	U	140	U
12	07/19/95	825	170	U	170	U	170	U	170	U	170	U

STA	DATE	TME	2,2-DICHLOROPROPANE		ACETONE		BENZENE		BROMOBENZENE		BROMOCHLOROMETHANE	
1	07/19/95	1417	120	U	1200	U	120	U	120	U	120	U
3	07/20/95	1026	90	U	900	U	90	U	90	U	90	U
4	07/19/95	1619	150	U	1000	J	150	U	150	U	150	U
6	07/19/95	1127	120	U	1200	J	120	U	120	U	120	U
9	07/19/95	1020	140	U	1400	U	140	U	140	U	140	U
12	07/19/95	825	170	U	1400	J	170	U	170	U	170	U

STA	DATE	TME	BROMODICHLOROMETHANE		BROMOFORM		BROMOMETHANE		CARBON DISULFIDE		CARBON TETRACHLORIDE	
1	07/19/95	1417	120	U	120	U	120	U	310	U	120	U
3	07/20/95	1026	90	U	90	U	90	U	220	U	90	U
4	07/19/95	1619	150	U	150	U	150	U	380	U	150	U
6	07/19/95	1127	120	U	120	U	120	U	310	J	120	U
9	07/19/95	1020	140	U	140	U	140	U	340	U	140	U
12	07/19/95	825	170	U	170	U	170	U	410	J	170	U

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.
N-Presumptive evidence of presence of material.
NR-Not Reported
K-Actual value is known to be less than value given.
L-Actual value is known to be greater than value given.
U-Material was analyzed for but not detected. The number is the minimum quantitation limit.
R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.
C-Confirmed by GCMS.
1.When no value is reported, see chlordane constituents.
2.Constituents or metabolites of technical chlordane.

JACKSONVILLE ODMDS - JULY 1995
VOLATILES ORGANIC ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 2 OF 2

STA	DATE	TME	CHLOROBENZENE		CHLOROETHANE		CHLOROFORM		CHLOROMETHANE		CIS-1,2-DICHLOROETHENE	
1	07/19/95	1417	120	U	120	U	120	U	120	U	120	U
3	07/20/95	1026	90	U	90	U	90	U	90	U	90	U
4	07/19/95	1619	150	U	150	U	150	U	150	U	150	U
6	07/19/95	1127	120	U	120	U	120	U	120	U	120	U
9	07/19/95	1020	140	U	140	U	140	U	140	U	140	U
12	07/19/95	825	170	U	170	U	170	U	170	U	170	U

STA	DATE	TME	CIS-1,3-DICHLOROPROPENE		DIBROMOCHLOROMETHANE		DIBROMOMETHANE		ETHYL BENZENE		METHYL BUTYL KETONE	
1	07/19/95	1417	120	U	120	U	120	U	120	U	310	U
3	07/20/95	1026	90	U	90	U	90	U	90	U	220	U
4	07/19/95	1619	150	U	150	U	150	U	150	U	380	U
6	07/19/95	1127	120	U	120	U	120	U	120	U	310	U
9	07/19/95	1020	140	U	140	U	140	U	140	U	340	U
12	07/19/95	825	170	U	170	U	170	U	170	U	410	U

STA	DATE	TME	METHYL ETHYL KETONE		METHYL ISOBUTYL KETONE		METHYLENE CHLORIDE		O-CHLOROTOLUENE		O-XYLENE	
1	07/19/95	1417	1200	U	310	U	120	U	120	U	120	U
3	07/20/95	1026	900	U	220	U	90	U	90	U	90	U
4	07/19/95	1619	1500	U	380	U	150	U	150	U	150	U
6	07/19/95	1127	1200	U	310	U	120	U	120	U	120	U
9	07/19/95	1020	1400	U	340	U	140	U	140	U	140	U
12	07/19/95	825	1700	U	410	U	170	U	170	U	170	U

STA	DATE	TME	P-CHLOROTOLUENE		STYRENE		TETRACHLOROETHENE		TOLUENE		TRANS-1,2-DICHLOROETHENE	
1	07/19/95	1417	120	U	120	U	120	U	120	U	120	U
3	07/20/95	1026	90	U	90	U	90		90	U	90	U
4	07/19/95	1619	150	U	150	U	150	J	150	U	150	U
6	07/19/95	1127	120	U	120	U	120	U	120	U	120	U
9	07/19/95	1020	140	U	140	U	140	U	140	U	140	U
12	07/19/95	825	170	U	170	U	170	U	170	U	170	U

STA	DATE	TME	TRANS-1,3-DICHLOROPROPENE		TRICHLOROETHENE (TRICHLOROETHYLENE)		TRICHLOROFLUOROMETHANE		VINYL CHLORIDE	
1	07/19/95	1417	120	U	120	U	120	U	120	U
3	07/20/95	1026	90	U	90	U	90	U	90	U
4	07/19/95	1619	150	U	150	U	150	U	150	U
6	07/19/95	1127	120	U	120	U	120	U	120	U
9	07/19/95	1020	140	U	140	U	140	U	140	U
12	07/19/95	825	170	U	170	U	170	U	170	U

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.
N-Presumptive evidence of presence of material.
NR-Not Reported
K-Actual value is known to be less than value given.
L-Actual value is known to be greater than value given.
U-Material was analyzed for but not detected. The number is the minimum quantitation limit.
R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.
C-Confirmed by GCMS.
1.When no value is reported, see chlordane constituents.
2.Constituents or metabolites of technical chlordane.

JACKSONVILLE ODMDS - JULY 1998
VOLATILES ORGANIC ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 1 OF 3

STA	DATE	TME	(M- AND/OR P-)XYLENE		1,1,1,2-TETRACHLOROETHANE		1,1,1-TRICHLOROETHANE		1,1,2,2-TETRACHLOROETHANE		1,1,2-TRICHLOROETHANE		1,1-DICHLOROETHANE		1,1-DICHLOROETHENE (1,1-DICHLOROETHYLENE)	
JA001SD	07/20/98	900	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
JA002SD	07/20/98	1000	0.75		0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA003SD	07/20/98	1105	0.34	J	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
JA004SD	07/20/98	1610	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA005SD	07/21/98	916	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
JA006SD	07/21/98	825	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
JA007SD	07/22/98	906	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
JA008SD	07/20/98	1445	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U
JA009SD	07/21/98	1035	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U
JA010SD	07/21/98	1545	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
JA011SD	07/22/98	815	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA012SD	07/21/98	1445	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U

STA	DATE	TME	1,1-DICHLOROPROPENE		1,2,3-TRICHLOROBENZENE		1,2,3-TRICHLOROPROPANE		1,2,4-TRICHLOROBENZENE		1,2,4-TRIMETHYLBENZENE		1,2-DIBROMO-3-CHLOROPROPANE (DBCP)		1,2-DIBROMOETHANE (EDB)	
JA001SD	07/20/98	900	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
JA002SD	07/20/98	1000	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA003SD	07/20/98	1105	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
JA004SD	07/20/98	1610	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA005SD	07/21/98	916	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
JA006SD	07/21/98	825	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
JA007SD	07/22/98	906	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
JA008SD	07/20/98	1445	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U
JA009SD	07/21/98	1035	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U
JA010SD	07/21/98	1545	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
JA011SD	07/22/98	815	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA012SD	07/21/98	1445	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U

STA	DATE	TME	1,2-DICHLOROBENZENE		1,2-DICHLOROETHANE		1,2-DICHLOROPROPANE		1,3,5-TRIMETHYLBENZENE		1,3-DICHLOROBENZENE		1,3-DICHLOROPROPANE		1,4-DICHLOROBENZENE	
JA001SD	07/20/98	900	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.56	U	0.56	U
JA002SD	07/20/98	1000	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.53	U	0.53	U
JA003SD	07/20/98	1105	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.56	U	0.56	U
JA004SD	07/20/98	1610	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.47	U	0.47	U
JA005SD	07/21/98	916	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.6	U	0.6	U
JA006SD	07/21/98	825	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.54	U	0.54	U
JA007SD	07/22/98	906	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.57	U	0.57	U
JA008SD	07/20/98	1445	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.55	U	0.55	U
JA009SD	07/21/98	1035	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	1.4	U	1.4	U
JA010SD	07/21/98	1545	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	0.56	U	0.56	U
JA011SD	07/22/98	815	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.49	U	0.49	U
JA012SD	07/21/98	1445	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	1.9	U	1.9	U

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.

N-Presumptive evidence of presence of material.

NR-Not Reported

K-Actual value is known to be less than value given.

L-Actual value is known to be greater than value given.

U-Material was analyzed for but not detected. The number is the minimum quantitation limit.

R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.

C-Confirmed by GCMS.

1.When no value is reported, see chlordane constituents.

2.Constituents or metabolites of technical chlordane.

JACKSONVILLE ODMDS - JULY 1998
VOLATILES ORGANIC ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 2 OF 3

STA	DATE	TME	2,2-DICHLOROPROPANE		ACETONE		BENZENE		BROMOBENZENE		BROMOCHLOROMETHANE		BROMODICHLOROMETHANE		BROMOFORM	
JA001SD	07/20/98	900	0.5	U	12	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
JA002SD	07/20/98	1000	0.56	U	14	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA003SD	07/20/98	1105	0.53	U	13	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
JA004SD	07/20/98	1610	0.56	U	14	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA005SD	07/21/98	916	0.47	U	12	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
JA006SD	07/21/98	825	0.6	U	15	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
JA007SD	07/22/98	906	0.54	U	14	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
JA008SD	07/20/98	1445	0.57	U	14	U	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U
JA009SD	07/21/98	1035	0.55	U	14	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U
JA010SD	07/21/98	1545	1.4	U	34	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
JA011SD	07/22/98	815	0.56	U	14	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA012SD	07/21/98	1445	0.49	U	12	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U

STA	DATE	TME	BROMOMETHANE		CARBON DISULFIDE		CARBON TETRACHLORIDE		CHLOROBENZENE		CHLOROETHANE		CHLOROFORM		CHLOROMETHANE	
JA001SD	07/20/98	900	0.5	U	1.2	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
JA002SD	07/20/98	1000	0.56	U	1.4	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA003SD	07/20/98	1105	0.53	U	1.3	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
JA004SD	07/20/98	1610	0.56	U	1.4	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA005SD	07/21/98	916	0.47	U	1.2	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
JA006SD	07/21/98	825	0.6	U	0.44	J	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
JA007SD	07/22/98	906	0.54	U	1.4	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
JA008SD	07/20/98	1445	0.57	U	1.4	U	0.57	U	0.57	U	0.57	U	0.57	U	0.23	J
JA009SD	07/21/98	1035	0.55	U	1.4	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U
JA010SD	07/21/98	1545	1.4	U	3.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
JA011SD	07/22/98	815	0.56	U	1.4	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA012SD	07/21/98	1445	0.49	U	0.54	J	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U

STA	DATE	TME	CIS-1,2-DICHLOROETHENE		CIS-1,3-DICHLOROPROPENE		DIBROMOCHLOROMETHANE		DIBROMOMETHANE		ETHYL BENZENE		HEXACHLORO-1,3-BUTADIENE		ISOPROPYLBENZENE	
JA001SD	07/20/98	900	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
JA002SD	07/20/98	1000	0.56	U	0.56	U	0.56	U	0.56	U	0.21	J	0.56	U	0.56	U
JA003SD	07/20/98	1105	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
JA004SD	07/20/98	1610	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA005SD	07/21/98	916	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
JA006SD	07/21/98	825	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
JA007SD	07/22/98	906	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
JA008SD	07/20/98	1445	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U
JA009SD	07/21/98	1035	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U
JA010SD	07/21/98	1545	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
JA011SD	07/22/98	815	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA012SD	07/21/98	1445	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.
N-Presumptive evidence of presence of material.
NR-Not Reported
K-Actual value is known to be less than value given.
L-Actual value is known to be greater than value given.
U-Material was analyzed for but not detected. The number is the minimum quantitation limit.
R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.
C-Confirmed by GCMS.
1.When no value is reported, see chlordane constituents.
2.Constituents or metabolites of technical chlordane.

JACKSONVILLE ODMDS - JULY 1998
VOLATILES ORGANIC ANALYSIS IN SEDIMENTS (ug/kg) - PAGE 3 OF 3

STA	DATE	TME	METHYL BUTYL KETONE		METHYL ETHYL KETONE		METHYL ISOBUTYL KETONE		METHYLENE CHLORIDE		N-BUTYLBENZENE		N-PROPYLBENZENE		O-CHLOROTOLUENE	
JA001SD	07/20/98	900	1.2	U	12	U	1.2	U	2.5	U	0.5	U	0.5	U	0.5	U
JA002SD	07/20/98	1000	1.4	U	14	U	1.4	U	2.8	U	0.56	U	0.56	U	0.56	U
JA003SD	07/20/98	1105	1.3	U	13	U	1.3	U	2.7	U	0.53	U	0.53	U	0.53	U
JA004SD	07/20/98	1610	1.4	U	14	U	1.4	U	2.8	U	0.56	U	0.56	U	0.56	U
JA005SD	07/21/98	916	1.2	U	12	U	1.2	U	2.3	U	0.47	U	0.47	U	0.47	U
JA006SD	07/21/98	825	1.5	U	15	U	1.5	U	3	U	0.6	U	0.6	U	0.6	U
JA007SD	07/22/98	906	1.4	U	14	U	1.4	U	2.7	U	0.54	U	0.54	U	0.54	U
JA008SD	07/20/98	1445	1.4	U	14	U	1.4	U	2.9	U	0.57	U	0.57	U	0.57	U
JA009SD	07/21/98	1035	1.4	U	14	U	1.4	U	2.7	U	0.55	U	0.55	U	0.55	U
JA010SD	07/21/98	1545	3.4	U	34	U	3.4	U	6.8	U	1.4	U	1.4	U	1.4	U
JA011SD	07/22/98	815	1.4	U	14	U	1.4	U	2.8	U	0.56	U	0.56	U	0.56	U
JA012SD	07/21/98	1445	1.2	U	12	U	1.2	U	2.5	U	0.49	U	0.49	U	0.49	U

STA	DATE	TME	O-XYLENE		P-CHLOROTOLUENE		P-ISOPROPYLTOLUENE		SEC-BUTYLBENZENE		STYRENE		TERT-BUTYLBENZENE		TETRACHLOROETHENE	
JA001SD	07/20/98	900	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
JA002SD	07/20/98	1000	0.25	J	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	3	
JA003SD	07/20/98	1105	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	1.1	
JA004SD	07/20/98	1610	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.18	J
JA005SD	07/21/98	916	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
JA006SD	07/21/98	825	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
JA007SD	07/22/98	906	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
JA008SD	07/20/98	1445	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.21	J
JA009SD	07/21/98	1035	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U
JA010SD	07/21/98	1545	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
JA011SD	07/22/98	815	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
JA012SD	07/21/98	1445	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U

STA	DATE	TME	TOLUENE		TRANS-1,2-DICHLOROETHENE		TRANS-1,3-DICHLOROPROPENE		TRICHLOROETHENE (TRICHLOROETHYLENE)		TRICHLOROFLUOROMET		VINYL CHLORIDE		DIMETHYL SULFIDE	
JA001SD	07/20/98	900	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	JN
JA002SD	07/20/98	1000	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	60	JN
JA003SD	07/20/98	1105	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	4	JN
JA004SD	07/20/98	1610	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	10	JN
JA005SD	07/21/98	916	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	8	JN
JA006SD	07/21/98	825	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	10	JN
JA007SD	07/22/98	906	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	20	JN
JA008SD	07/20/98	1445	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	0.57	U	80	JN
JA009SD	07/21/98	1035	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	60	JN
JA010SD	07/21/98	1545	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	10	JN
JA011SD	07/22/98	815	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	8	JN
JA012SD	07/21/98	1445	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	10	JN

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.
N-Presumptive evidence of presence of material.
NR-Not Reported
K-Actual value is known to be less than value given.
L-Actual value is known to be greater than value given.
U-Material was analyzed for but not detected. The number is the minimum quantitation limit.
R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.
C-Confirmed by GCMS.
1.When no value is reported, see chlordane constituents.
2.Constituents or metabolites of technical chlordane.

APPENDIX D
NUTRIENT ANALYSIS IN SEDIMENTS

JACKSONVILLE ODMDS, JULY 1995 - SEDIMENT NUTRIENT SCAN (mg/kg)										
STA	DATE	TIME	AMMONIA		NITRATE-NITRITE		TKN		TOTAL PHOSPHORUS	
1	07/19/95	1417	8.5			U		NA	880	
2	07/19/95	1330	4.9			U		NA	1200	
3	07/19/95	1026		U		U		NA	740	
4	07/19/95	1619	17.0		17			NA	930	
5	07/19/95	1226	12.0			U		NA	990	
6	07/19/95	1127	7.2			U		NA	83	
7	07/19/95	1510	9.8			U		NA	980	
8	07/20/95	0922	10.0			U		NA	640	
9	07/19/95	1020	7.3			U		NA	1300	
10	07/19/95	0913	6.4			U		NA	1000	
11	07/20/95	0839	6.1			U		NA	1000	
12	07/19/95	0825	7.9			U		NA	960	

JACKSONVILLE ODMDS, JULY 1998 - SEDIMENT NUTRIENT SCAN (mg/kg)										
STA	DATE	TIME	AMMONIA		NITRATE-NITRITE		TKN		TOTAL PHOSPHORUS	
1	07/20/98	900	5.3		17	U	68	U	230	
2	07/20/98	1000	5	A	17	U	180	A	620	
3	07/20/98	1105	5		17	U	71	U	1500	
4	07/20/98	1610	3.4	U	16	U	68	U	590	A
5	07/21/98	916	4.5		18	U	78	U	480	
6	07/21/98	825	7.4		16	U	140		110	
7	07/22/98	906	3.5	U	17	U	70	U	150	
8	07/20/98	1445	3.7		18	U	75	U	730	
9	07/21/98	1035	13	A	18	U	520	A	1200	A
10	07/21/98	1545	5.8		18	U	74	U	1100	
11	07/22/98	815	3.3	U	17	U	68	U	710	
12	07/21/98	1445	7.1		17	U	190		1100	
4QA	07/20/98	1610	3.3	U	16	U	81		260	

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.
N-Presumptive evidence of presence of material.
NR-Not Reported
K-Actual value is known to be less than value given.
L-Actual value is known to be greater than value given.
U-Material was analyzed for but not detected. The number is the minimum quantitation limit.
R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.
C-Confirmed by GCMS.
1.When no value is reported, see chlordane constituents.
2.Constituents or metabolites of technical chlordane.

APPENDIX E
NUTRIENT SCAN IN WATER

JACKSONVILLE ODMDS, JULY 1998 - WATER NUTRIENTS SCAN (mg/l)											
STA	STRATA	DATE	TIME	AMMONIA		NITRATE-NITRITE		TKN		TOTAL PHOSPHORUS	
3	TOP	07/20/98	1245	0.05	U	0.05	U	0	U	0.02	U
3	MID	07/20/98	1245	0.05	U	0.05	U	0	U	0.02	U
3	BOTTOM	07/20/98	1245	0.05	U	0.05	U	0	U	0.02	U
4	TOP	07/20/98	1345	0.05	U	0.05	U	0		0.02	U
4	MID	07/20/98	1346	0.05	U	0.05	U	0	U	0.02	U
4	BOTTOM	07/20/98	1345	0.05	U	0.05	U	0		0.02	U
6	TOP	07/21/98	1320	0.05	U	0.05	U	0	U	0.02	U
6	MID	07/21/98	1320	0.05	U	0.05	U	0	U	0.02	U
6	BOTTOM	07/21/98	1320	0.05	U	0.05	U	0	U	0.02	U
8	TOP	07/20/98	1315	0.05	U	0.05	U	0		0.02	U
8	MID	07/20/98	1315	0.05	U	0.05	U	0	U	0.02	U
8	BOTTOM	07/20/98	1315	0.05	U	0.05	U	0	U	0.02	U
10	TOP	07/21/98	1400	0.05	U	0.05	U	0	U	0.02	U
10	MID	07/21/98	1400	0.05	U	0.05	U	0	U	0.02	U
10	BOTTOM	07/21/98	1400	0.05	U	0.05	U	0		0.02	U
12	TOP	07/21/98	1230	0.05	U	0.05	U	0	U	0.02	U
12	MID	07/21/98	1230	0.05	U	0.05	U	0	U	0.02	U
12	BOTTOM	07/21/98	1230	0.05	U	0.05	U	0	U	0.02	U
QA4	TOP	07/20/98	1345	0.05	U	0.05	U	0		0.02	U
QA4	BOTTOM	07/20/98	1345	0.05	U	0.05	U	0	U	0.02	U

Data Qualifiers

A-Average value. NA-Not analyzed. NAI-Interferences. J-Estimated value.
N-Presumptive evidence of presence of material.
NR-Not Reported
K-Actual value is known to be less than value given.
L-Actual value is known to be greater than value given.
U-Material was analyzed for but not detected. The number is the minimum quantitation limit.
R-QC indicates that data unusable. Compound may or may not be present. Resampling and reanalysis is necessary for verification.
C-Confirmed by GCMS.
1.When no value is reported, see chlordane constituents.
2.Constituents or metabolites of technical chlordane.

APPENDIX F
PARTICLE SIZE ANALYSIS
WET SIEVE METHOD

APPENDIX F
JACKSONVILLE ODMDS, JULY 1995
PARTICLE SIZE BY WET SIEVE METHOD

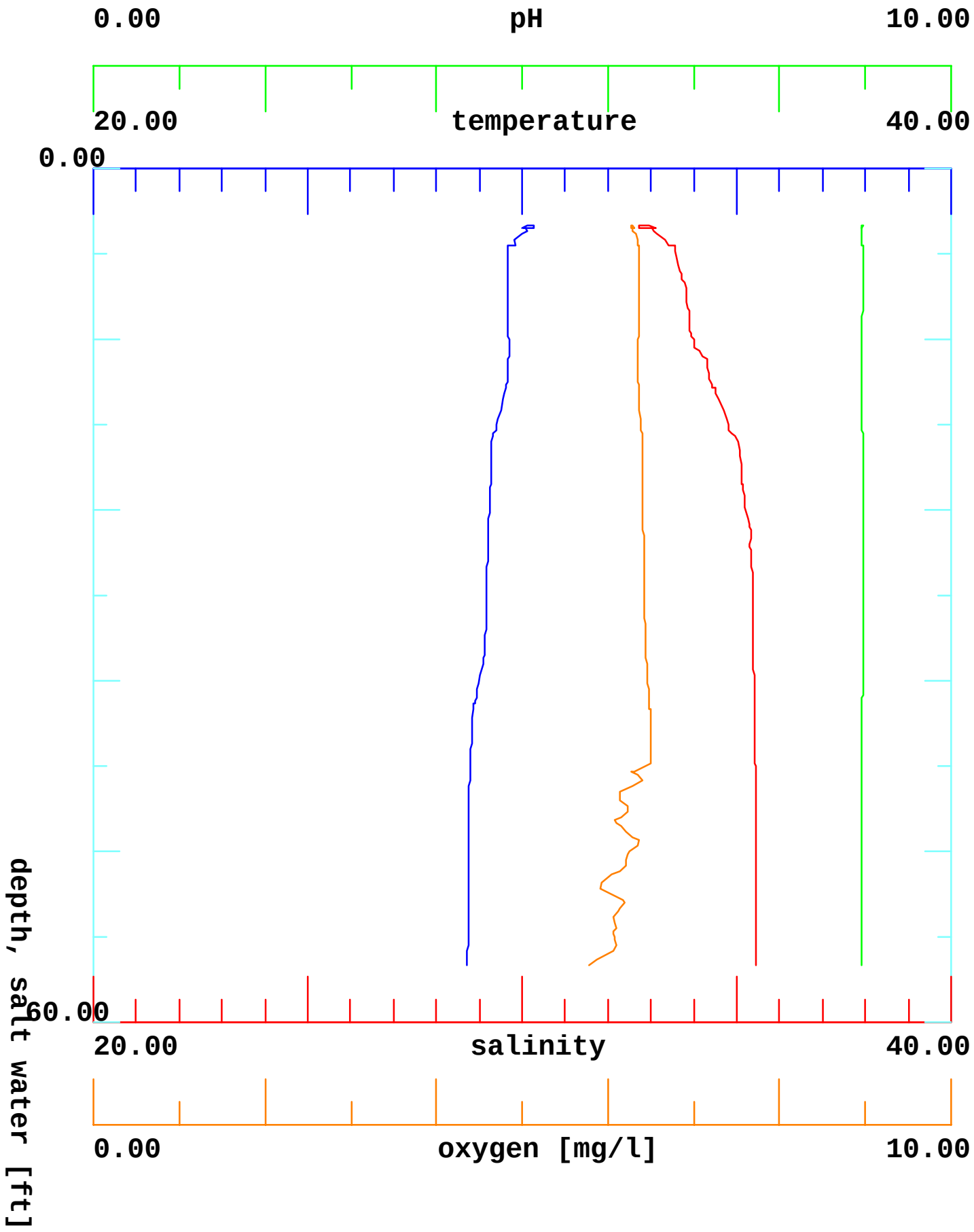
Station	Fraction	M. Gravel	F. Gravel	C. Sand	M. Sand	F. Sand	VF. Sand	Silt	Clay	Totals	% Sand
1	INORGANIC	0.1122	0.8927	6.9931	42.8674	46.4285	1.4329	0.0951	0.8201	99.642	97.7220
1	ORGANIC	0.0014	0.0173	0.0450	0.0579	0.0656	0.0072	0.0193	0.1442	0.358	0.1758
2	INORGANIC	1.4876	4.6146	29.7282	49.5101	12.6435	0.5325	0.1849	0.8877	99.589	92.4143
2	ORGANIC	0.0167	0.0797	0.0682	0.0610	0.0203	0.0036	0.0395	0.1220	0.411	0.1531
3	INORGANIC	0.3658	0.5203	6.1961	51.2216	39.5648	0.7949	0.1182	0.8087	99.590	97.7773
3	ORGANIC	0.0073	0.0105	0.0474	0.1060	0.0613	0.0073	0.0253	0.1446	0.410	0.2219
4	INORGANIC	6.2162	14.7370	34.9442	22.9796	8.7065	1.1644	7.4611	1.6013	97.810	67.7948
4	ORGANIC	0.1349	0.2078	0.2358	0.0860	0.0912	0.1120	1.0037	0.3183	2.190	0.5250
5	INORGANIC	0.7809	5.0961	18.9801	35.5841	28.1198	4.6678	3.9653	1.4072	98.601	87.3518
5	ORGANIC	0.0130	0.0885	0.1734	0.1472	0.1612	0.1029	0.5205	0.1920	1.399	0.5847
6	INORGANIC	0.6198	3.8382	50.2299	35.4764	6.6435	1.1164	0.6404	0.9419	99.507	93.4662
6	ORGANIC	0.0096	0.0538	0.0813	0.0525	0.0202	0.0156	0.1100	0.1503	0.493	0.1696
7	INORGANIC	0.1933	1.8544	19.7457	45.5365	30.2840	0.7625	0.1851	0.9592	99.521	96.3287
7	ORGANIC	0.0025	0.0324	0.0834	0.0861	0.0445	0.0055	0.0410	0.1840	0.479	0.2195
8	INORGANIC	0.0000	0.4302	4.5502	32.3685	57.3955	2.0541	1.5219	1.0121	99.332	96.3683
8	ORGANIC	0.0000	0.0093	0.0372	0.0851	0.1446	0.0179	0.2106	0.1629	0.668	0.2848
9	INORGANIC	0.5516	1.2529	7.6635	17.6769	51.0670	12.0106	6.4421	1.6600	98.325	88.4179
9	ORGANIC	0.0080	0.0300	0.0978	0.1231	0.1327	0.1123	0.8861	0.2854	1.675	0.4660
10	INORGANIC	0.0000	0.3822	4.8788	41.9594	47.9830	2.7246	0.4451	1.0978	99.471	97.5458
10	ORGANIC	0.0000	0.0077	0.0265	0.0764	0.1260	0.0181	0.0710	0.2033	0.529	0.2470
11	INORGANIC	0.0000	1.7660	15.9042	58.1381	22.3377	0.4520	0.0616	0.7757	99.435	96.8320
11	ORGANIC	0.0000	0.0300	0.0522	0.0898	0.2184	0.0039	0.0149	0.1555	0.565	0.3642
12	INORGANIC	0.0000	0.3276	1.1082	7.0974	80.2242	8.4732	0.7584	1.0863	99.075	96.9031
12	ORGANIC	0.0000	0.0381	0.2205	0.0237	0.2217	0.0401	0.0935	0.2870	0.925	0.5060

JACKSONVILLE ODMDS, JULY 1998
PARTICLE SIZE BY WET SIEVE METHOD

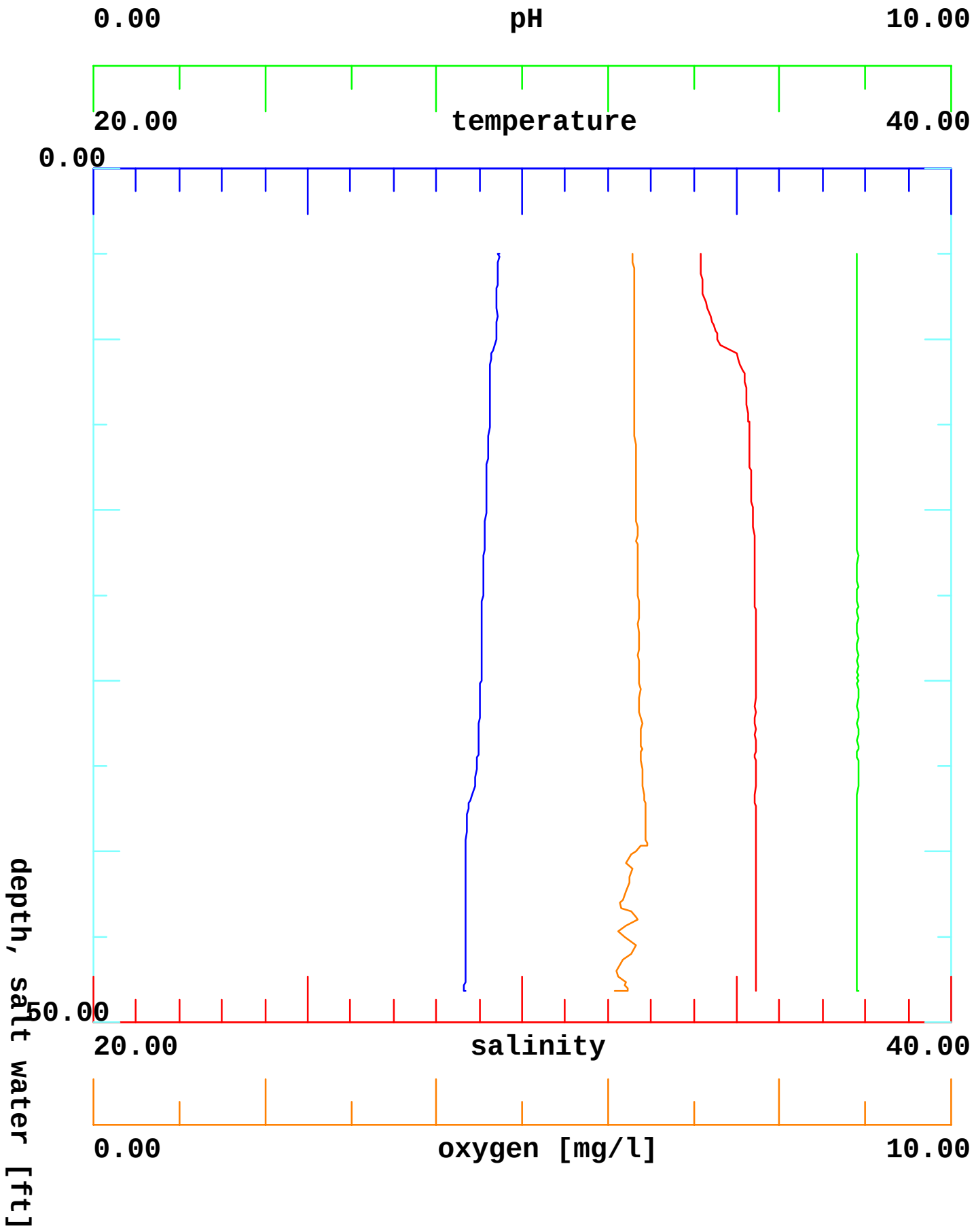
Station	Fraction	M. Gravel	F. Gravel	C. Sand	M. Sand	F. Sand	VF. Sand	Silt	Clay	Totals	% Sand
1	INORGANIC	0.862	6.082	16.971	45.069	26.477	1.290	0.456	1.991	99.197	89.807
1	ORGANIC	0.011	0.088	0.125	0.048	0.028	0.008	0.074	0.420	0.803	0.209
2	INORGANIC	0.518	2.685	18.364	39.559	30.651	2.009	3.263	1.915	98.964	90.584
2	ORGANIC	0.006	0.042	0.088	0.071	0.048	0.021	0.371	0.390	1.036	0.227
3	INORGANIC	0.000	0.207	2.265	21.367	71.330	2.222	0.454	1.623	99.468	97.184
3	ORGANIC	0.000	0.004	0.016	0.027	0.093	0.007	0.078	0.308	0.532	0.142
4	INORGANIC	0.77	2.41	20.36	31.25	29.99	10.44	2.30	1.75	99.27	92.036
4	ORGANIC	0.00	0.03	0.08	0.03	0.03	0.02	0.19	0.34	0.73	0.166
5	INORGANIC	0.137	1.511	26.711	50.925	17.225	1.454	0.697	0.877	99.538	96.316
5	ORGANIC	0.001	0.016	0.078	0.056	0.024	0.006	0.136	0.144	0.462	0.165
6	INORGANIC	1.644	2.382	40.200	33.473	12.005	4.123	3.668	1.561	99.056	89.800
6	ORGANIC	0.032	0.038	0.087	0.074	0.031	0.030	0.434	0.217	0.944	0.222
7	INORGANIC	0.814	3.362	19.109	52.754	19.506	0.952	0.405	2.424	99.326	92.321
7	ORGANIC	0.009	0.050	0.051	0.057	0.027	0.005	0.065	0.410	0.674	0.141
8	INORGANIC	0.000	1.159	10.057	42.011	34.866	2.407	5.623	2.397	98.519	89.340
8	ORGANIC	0.000	0.017	0.070	0.082	0.073	0.072	0.806	0.361	1.481	0.297
9	INORGANIC	5.952	2.584	12.182	11.765	26.277	30.763	7.016	1.853	98.393	80.987
9	ORGANIC	0.070	0.069	0.063	0.069	0.133	0.157	0.804	0.242	1.607	0.423
10	INORGANIC	8.870	5.825	15.079	26.950	38.889	2.041	0.529	1.091	99.274	82.959
10	ORGANIC	0.041	0.068	0.111	0.052	0.044	0.010	0.106	0.296	0.726	0.216
11	INORGANIC	0.000	0.847	3.047	25.713	65.412	3.600	0.167	0.849	99.636	97.772
11	ORGANIC	0.000	0.014	0.018	0.033	0.066	0.013	0.032	0.189	0.364	0.129
12	INORGANIC	0.000	0.265	0.613	4.001	67.052	22.954	2.973	1.347	99.206	94.620
12	ORGANIC	0.000	0.023	0.054	0.051	0.211	0.090	0.155	0.211	0.794	0.406

APPENDIX G
CTD PROFILES

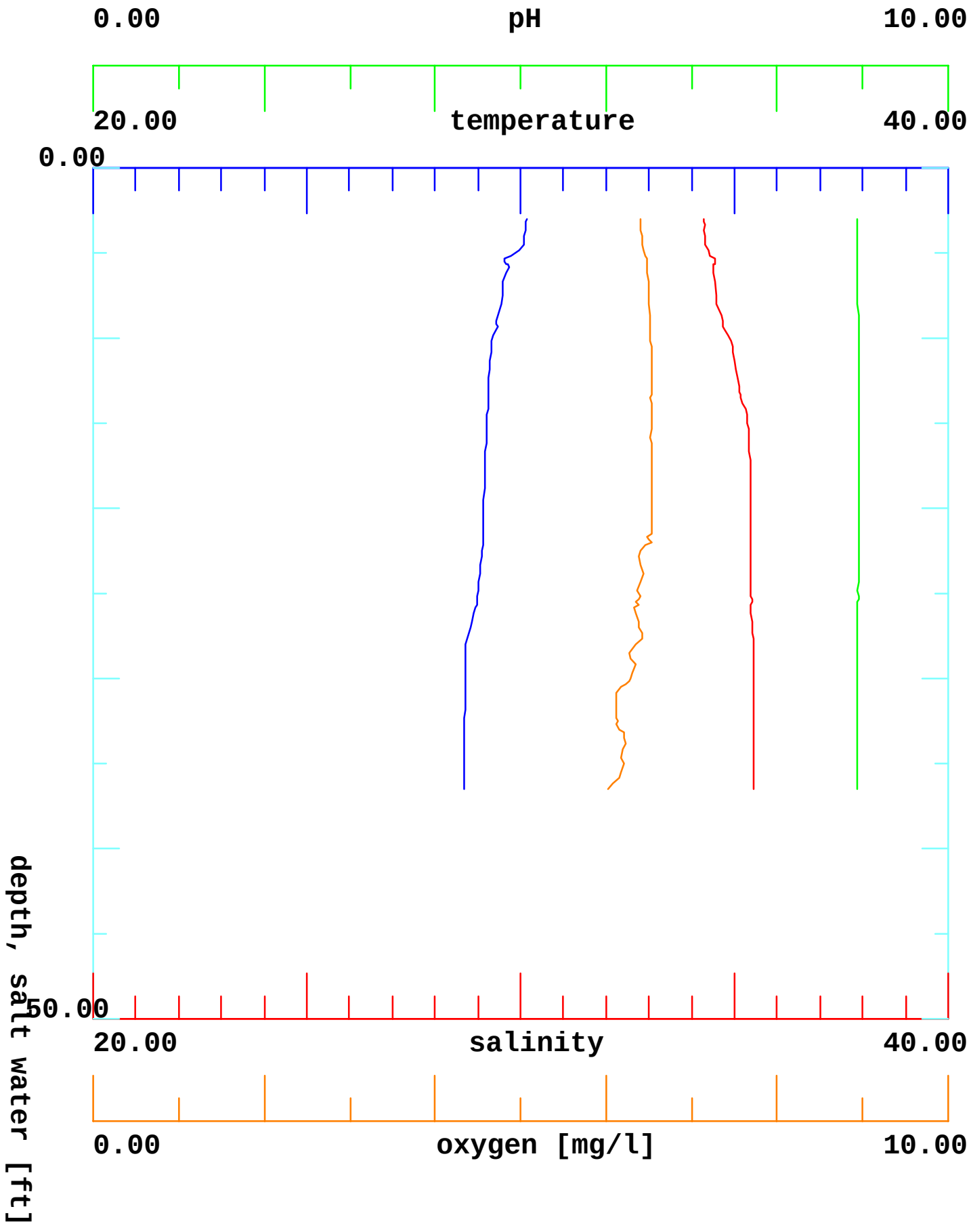
JX1.DAT: JAX ODMDS, JULY 1995 - STA 1



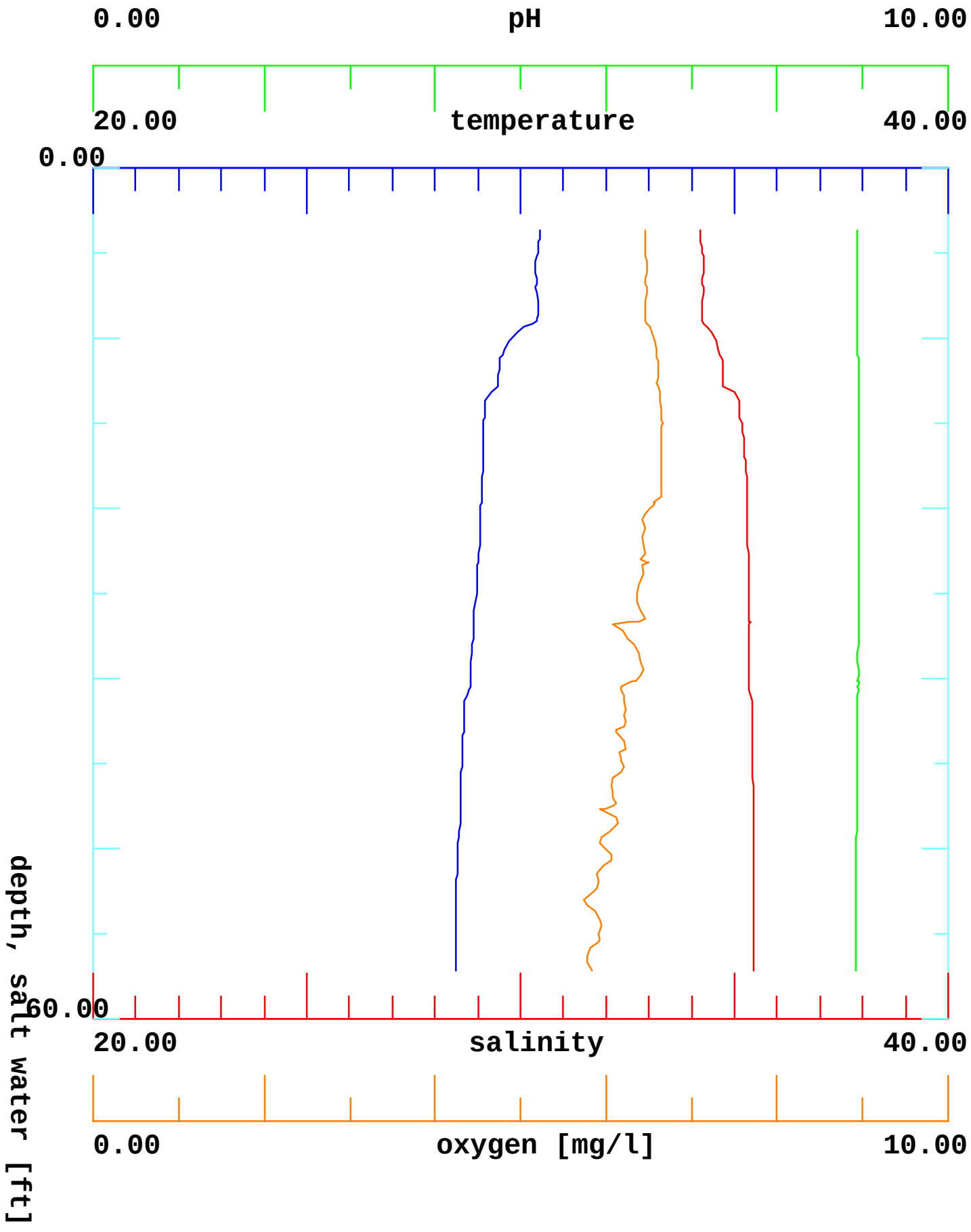
JX03.DAT: JAX ODMDS, JULY 1995 - STA 3



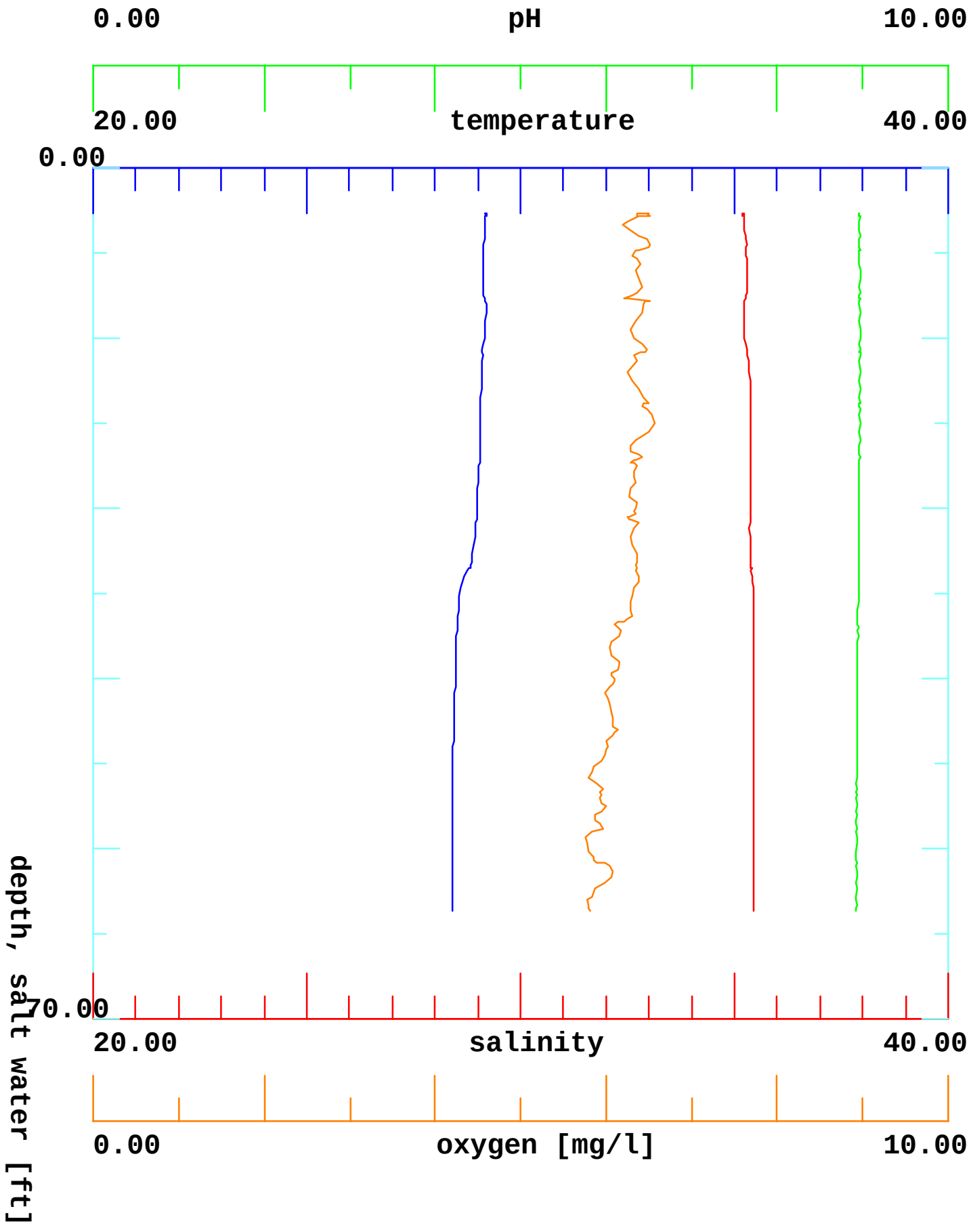
JX04.DAT: JAX ODMDS, JULY 1995 - STA 4



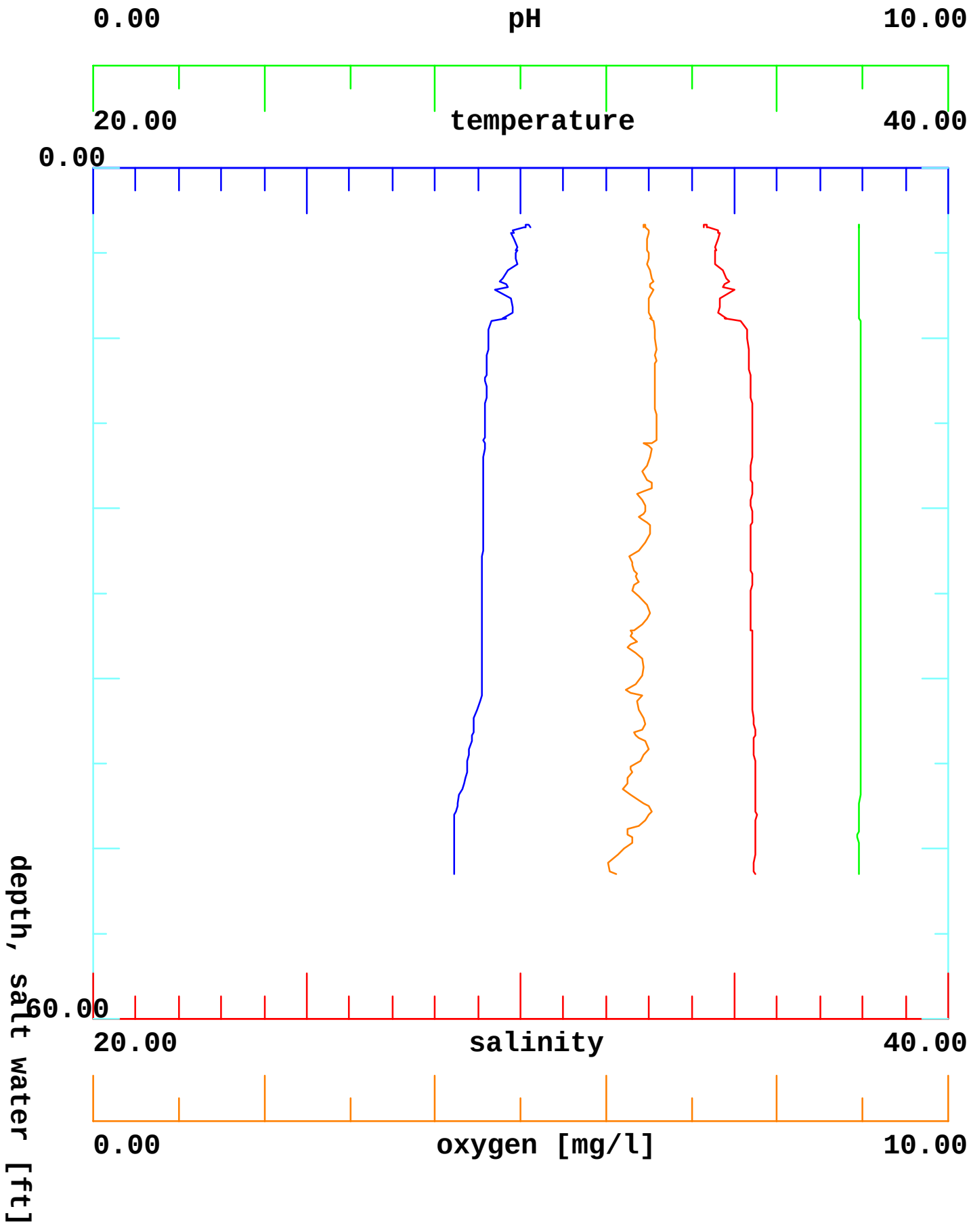
JX06.DAT: JAX ODMDS, JULY 1995 - STA 6



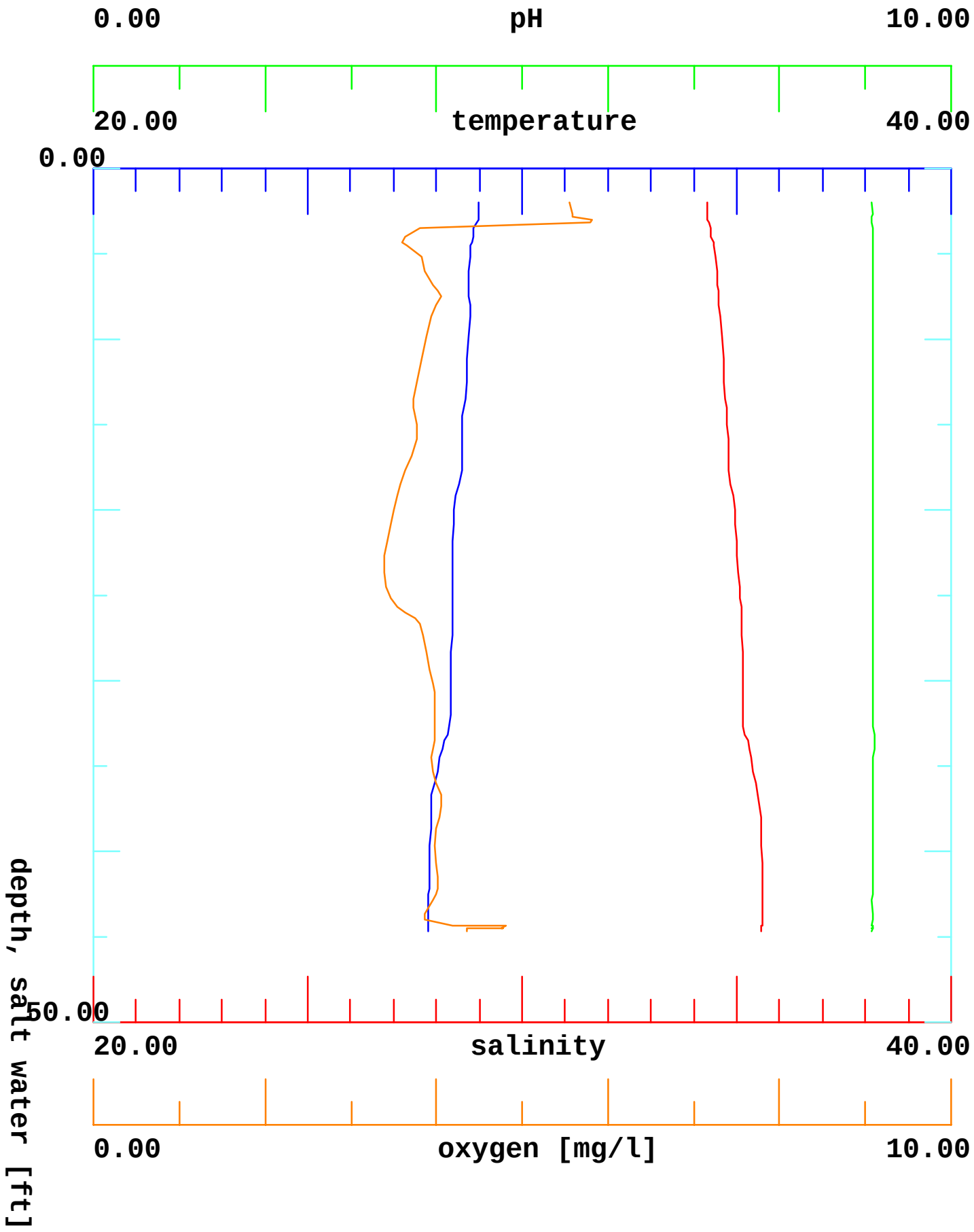
JX09.DAT: JAX ODMDS, JULY 1995 - STA 9



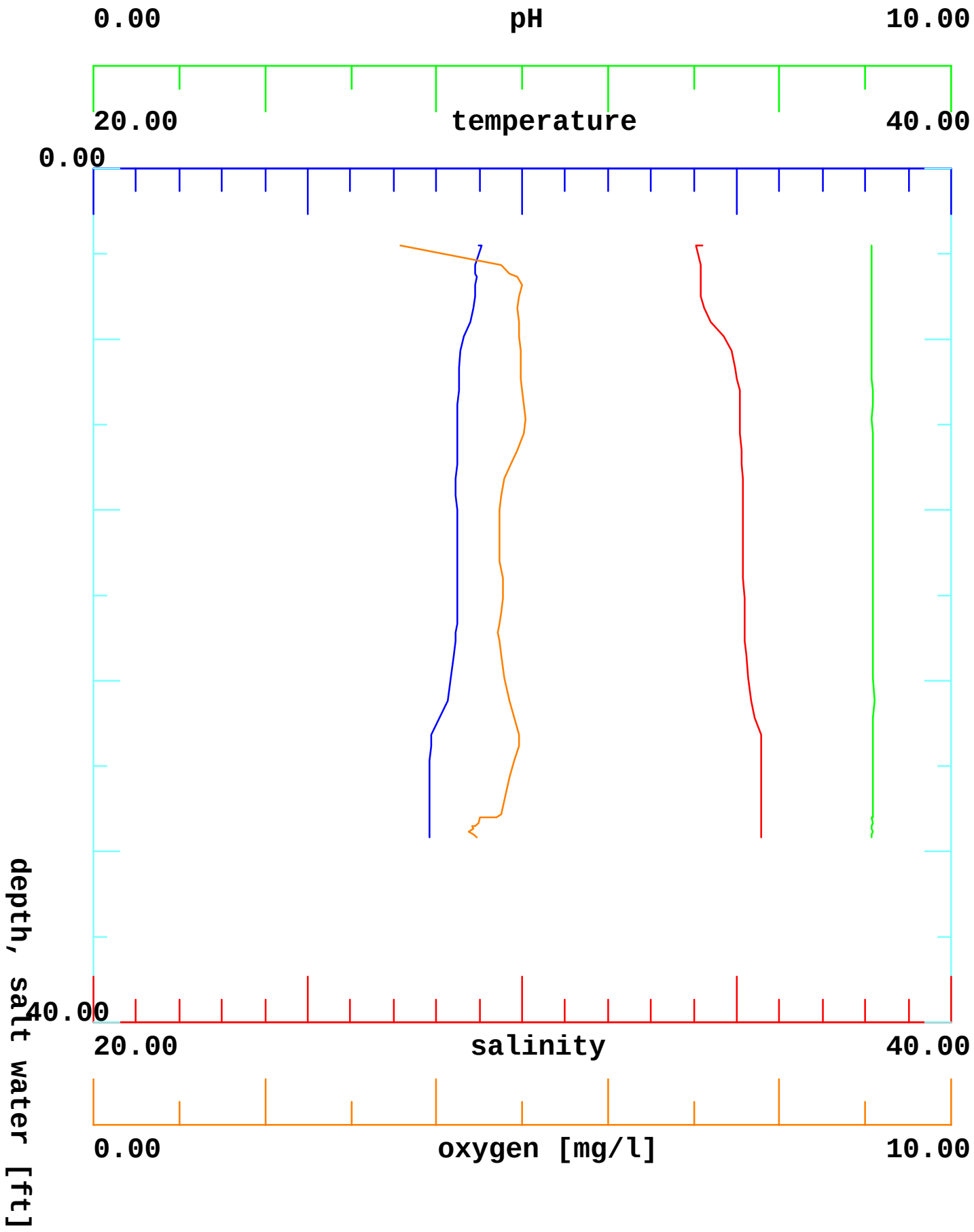
JX12.DAT: JAX ODMDS, JULY 1995 - STA 12



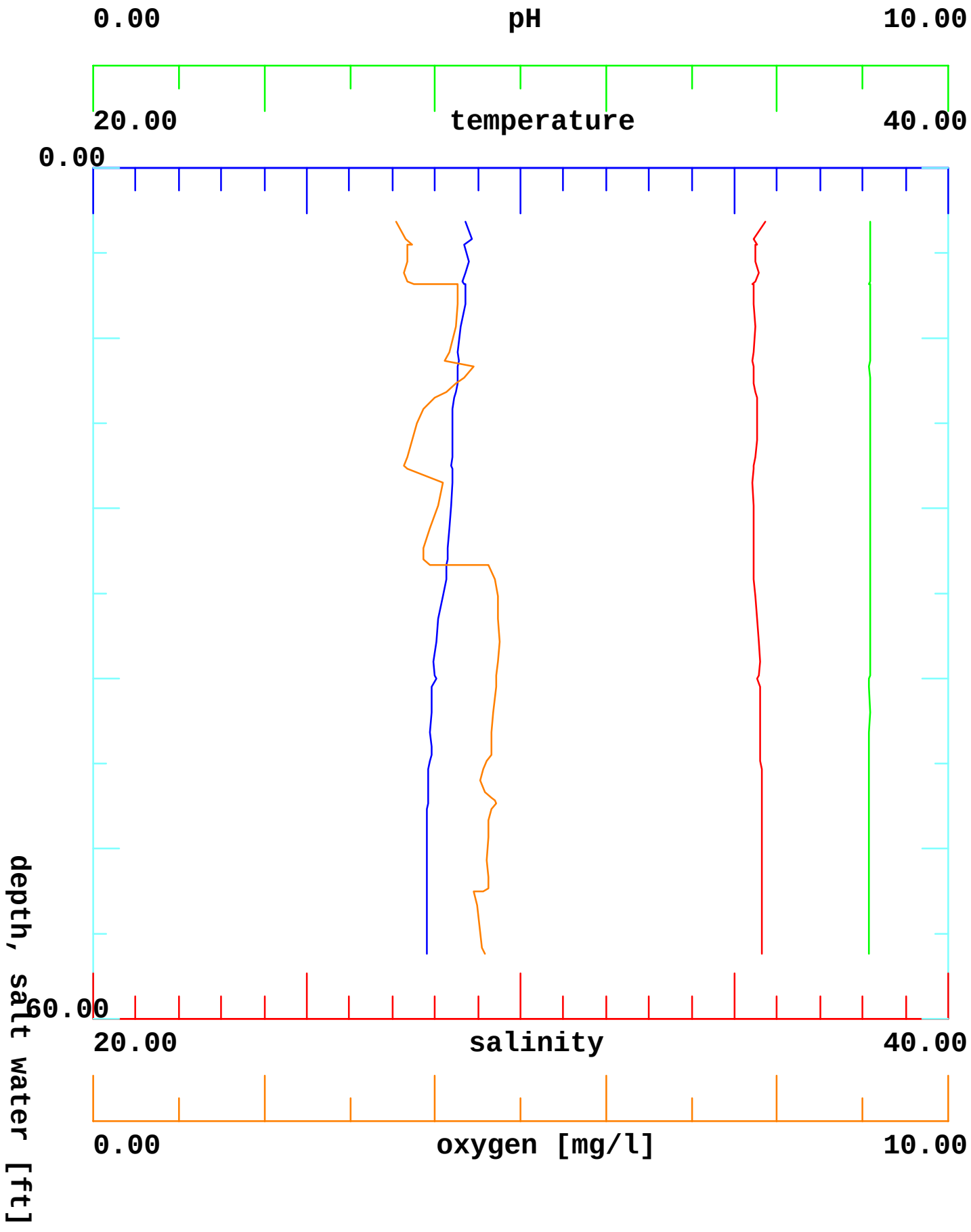
JAX3.DAT: JAX ODMDS, JULY 1998 - STA 3



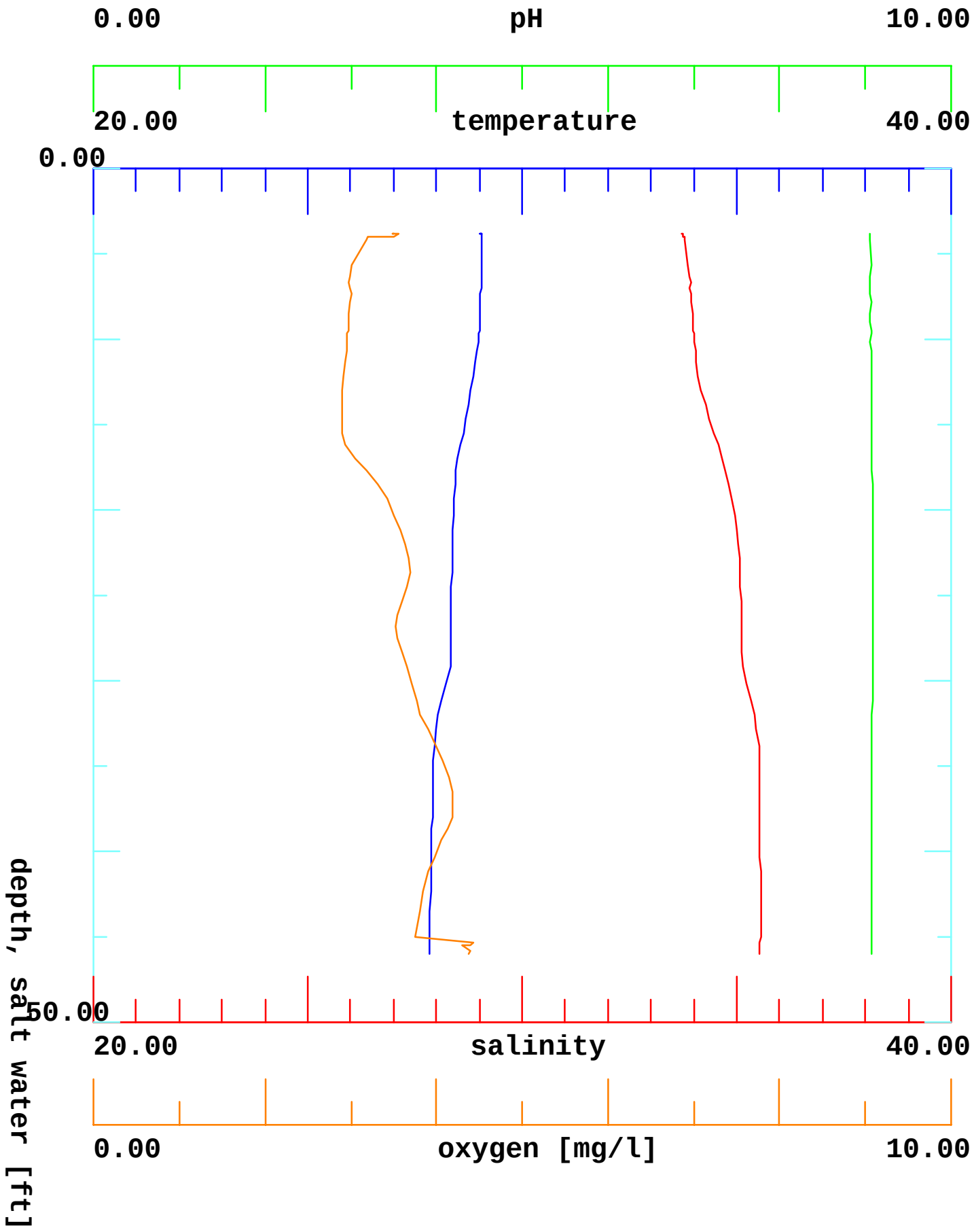
JAX4.DAT: JAX ODMDS, JULY 1998 - STA 4



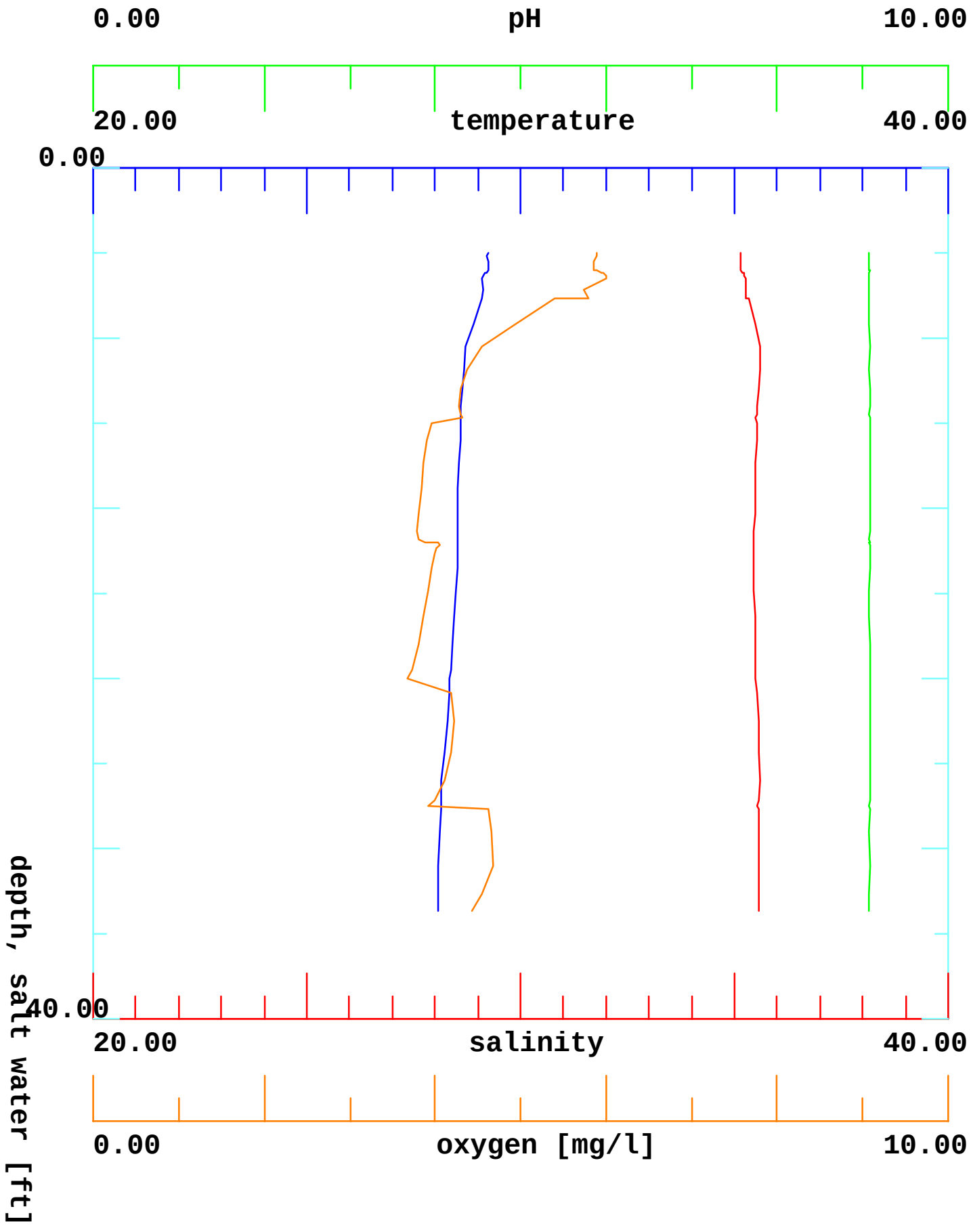
JAX6.DAT: JAX ODMDS, JULY 1998 - STA 6



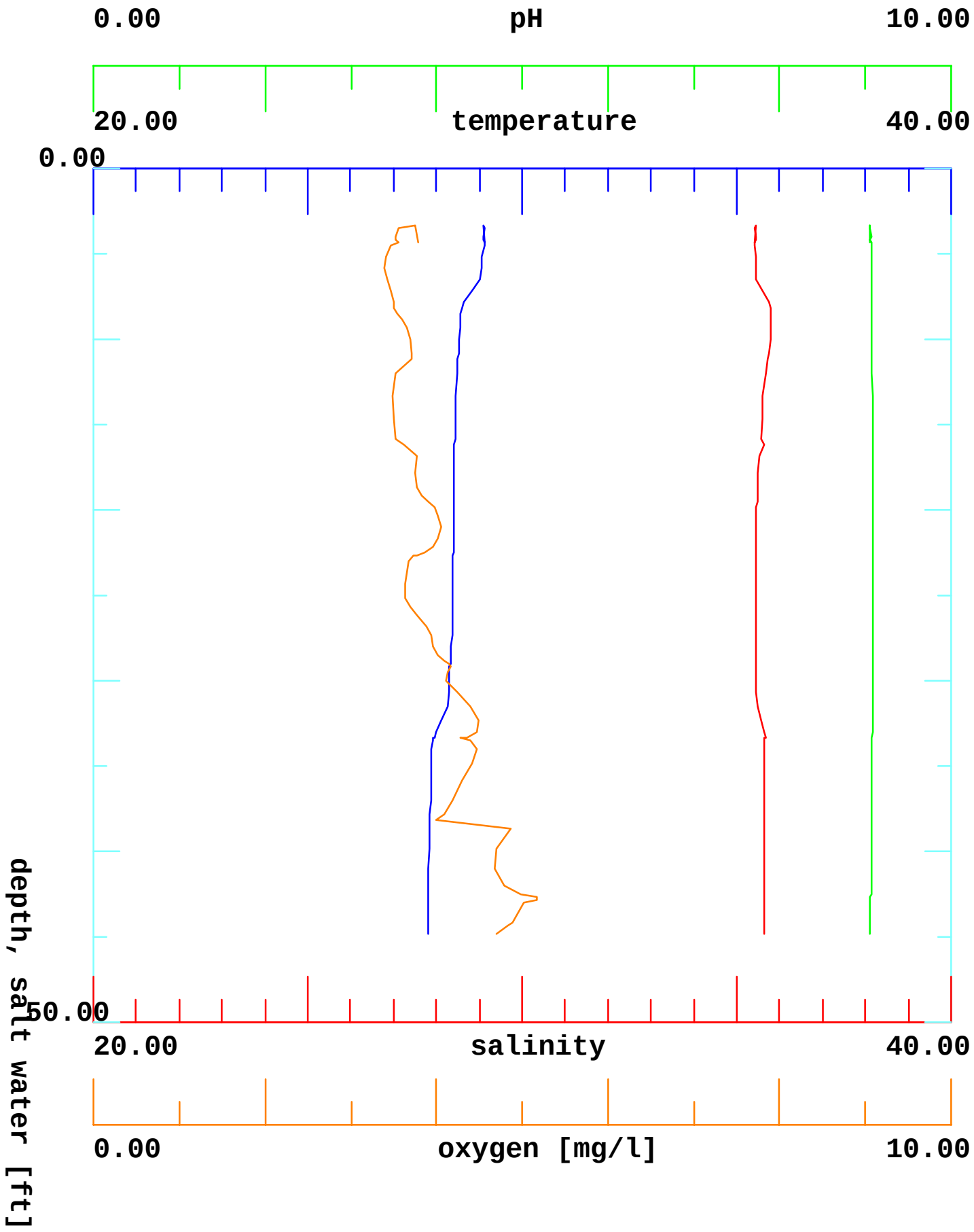
JAX8.DAT: JAX ODMDS, JULY 1998 - STA 8



JAX10.DAT: JAX ODMDS, JULY 1998 - STA 10



JAX12.DAT: JAX ODMDS, JULY 1998 - STA 12



APPENDIX H
CHLOROPHYLL a

JACKSONVILLE ODMDS CHLOROPHYLL a ANALYSIS, JULY 1995

STA	% LIGHT	DEPTH	DATE	CHL. A (ug/l)
1	50	2.5	07/20/95	10.0
1	10	11	07/20/95	7.3
3	50	0	07/20/95	6.0
3	10	8.5	07/20/95	4.7
4	50	2	07/20/95	4.7
4	10	20	07/20/95	1.3
6	50	3	07/20/95	4.0
6	10	19	07/20/95	2.0
9	50	3	07/20/95	3.3
9	10	23	07/20/95	3.3
12	50	2	07/20/95	4.0
12	10	21	07/20/95	2.0

JACKSONVILLE ODMDS CHLOROPHYLL a ANALYSIS, JULY 1998

STA	% LIGHT	DEPTH	DATE	CHL. A (ug/l)
3	50	1	07/20/98	1.30
3	10	20	07/20/98	1.00
4	50	0	07/20/98	2.20
4	10	12.5	07/20/98	1.30
6	90	4	07/21/98	0.50
6	50	20	07/21/98	0.65
6	10	37	07/21/98	1.10
8	90	0	07/20/98	2.40
8	50	3	07/20/98	2.00
8	10	18	07/20/98	1.30
10	90	5	07/21/98	0.48
10	50	20	07/21/98	0.82
10	10	35	07/21/98	1.40
12	50	2	07/21/98	0.72
12	10	22.5	07/21/98	0.92
6QA	90	4	07/21/98	0.52
6QA	50	20	07/21/98	0.67
6QA	10	37	07/21/98	1.10
QA018FLB	BLANK	DI	07/20/98	0.10