US Army Corps
of Engineers
Fort Worth District

ENVIRONMENTAL ASSESSMENT

WATER-RELATED RECREATION DEVELOPMENT

LEWISVILLE LAKE

LEWISVILLE, TEXAS

REVISED DECEMBER 2000

ENVIRONMENTAL ASSESSMENT

FOR

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LEWISVILLE LAKE, LEWISVILLE, TEXAS

Revised December 2000

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ENVIRONMENTAL ASSESSMENT
for
WATER-RELATED RECREATION DEVELOPMENT
at
LEWISVILLE LAKE, LEWISVILLE, TEXAS

This document is tiered to the Lewisville Lake Programmatic Environmental Assessment (PEA) finalized in September 1999.

PURPOSE AND NEED

General Location

Lewisville Lake is located in the southern portion of Denton County in north central Texas (Figure 1). The lake is approximately 25 miles northwest of the Dallas central business district and is at the northern boundary of the City of Lewisville. The lake is approximately 12 miles long and over 5 miles wide in several locations. Descriptions and background information on the existing lake project can be found on pages 1 and 2 of the published PEA or in the electronic PEA document on the Fort Worth District Internet Home Page at http://www.swf.usace.army.mil

Study Background and Authority

In 1999, a Programmatic Environmental Assessment (PEA) was prepared to discuss the environmental impacts of more than 300 individual development actions being proposed by 18 public and private entities within the next 10 years on Federal lands around Lewisville Lake. The PEA identified the future and foreseeable individual development actions, assessed the potential cumulative impacts from these actions on the human and natural environment, and presented information to be used in the ensuing supplement to the Lewisville Lake Master Plan, Design Memorandum No. 1C, June 1985. At the time of the PEA, several entities put forward water-related recreation developmental plans that would affect the carrying capacity, or the number of vessels (any boat motorized or non-motorized), on Lewisville Lake. The findings of the PEA concluded that the requests to increase the number of vessels on the lake would exceed the carry capacity established by the Corps in the Lewisville Lake Future Water-Related Development Policy (see Exhibit 13 in the PEA). This policy authorized the increase of 274 vessels on Lewisville Lake distributed by a 0 vessel increase in Zone A, a 46 vessel increase in Zone B, and a 228 vessel increase in Zone C (Figure 2). In order to avoid exceeding the carrying capacity of the lake requiring an EIS, an alternative, based on the policy's recommendations for carrying capacity limits, was developed and assessed in the PEA. This alternative required that all entities requesting authorization of development projects affecting the number of vessels on the lake get together, arrive at a consensus, revise, and resubmit their requests so that they not exceed the established carrying capacity, either cumulatively or by zone. Individual proposals for water-related recreation development that were originally submitted by the various entities were removed from further consideration in the PEA. The FONSI, which was executed on September 30, 1999, approved the carrying capacity established in the Lewisville Lake Future Water-Related Development Policy, allowing for a 274 vessel equivalent increase without specifying the distribution of those vessel equivalents.

Figure 1. Regional Map

Figure 2. Lewisville Lake Zone Locations.

As outlined in the PEA, all the entities that requested authorization of development projects affecting the carrying capacity of the lake held a meeting on January 20, 2000 where they arrived at a consensus on how to equitably distribute the available vessel carrying capacity in each zone. As a result of the meeting, these entities revised, and resubmitted their requests for further environmental consideration. The purpose of this environmental assessment (EA) is to supplement the analyses of the PEA in regard to the proposed water-related recreation development to the extent necessary to meet the requirements of the National Environmental Policy Act (NEPA) of 1969. This EA, therefore, serves to fulfill the requirements of NEPA and pertinent USACE regulatory guidance for implementing the procedural provisions of NEPA found in Engineering Regulation (ER) 200-2-2.

AFFECTED ENVIRONMENT

Title II of NEPA created the Council on Environmental Quality (CEQ) and in 1978 the CEQ issued regulations (40 CFR Parts 1500-1508) which established statutes for implementing the provisions of NEPA. The CEQ promotes the concept of tiering EA's and Environmental Impact Statements (EISs) in order to eliminate repetitive discussions of the same issues and focus instead on the issues relating to specific actions. For example, whenever a PEA has been prepared and a subsequent EA or EIS is required for a site-specific action included within the program already evaluated, the more specific EA or EIS need only refer to pertinent data from the PEA and focus on specific impacts of the proposed project. Since this document is being tiered to the PEA only those parameters under the Affected Environment section of that document that have changed or where pertinent updated data was available are discussed in this EA**.** Descriptions of the affected environment can be found on pages 8 through 25 of the published PEA or in the electronic PEA document on the Fort Worth District Internet Home Page at http://www.swf.usace.army.mil.

Water Quality

The Clean Water Act of 1972, and its subsequent amendments, forms the basis today for water quality protection for surface water in streams, rivers, and lakes, as well as for groundwater. In addition, the Safe Drinking Water Act of 1974 and amendments created national drinking water standards to limit a range of substances that can adversely affect human health. There are three different types of water quality standards set by state and federal regulations. These are: 1) stream standards, also referred to as surface water quality standards; 2) effluent standards (set for wastewater); and 3) drinking water standards, which also cover groundwater used as a public water supply. The Texas Natural Resources Conservation Commission (TNRCC) is the primary agency responsible for water quality management in the state.

Texas does not apply a single set of water quality standards to all surface waters in the state. Instead, waters are "classified" according to how they are used, and water quality standards appropriate to that use are applied. Some examples of use classifications are "contact recreation" (swimming), non-contact recreation (boating and fishing), and "public water supply" (drinking water). In monitoring these river and stream segments, the TNRCC seeks to determine whether the water quality is adequate for a segment's classified use.

Lewisville Lake is located on the Elm Fork of the Trinity River and is included in Segment 0823 of the Trinity River Basin. Based on 1999 water quality assessment and monitoring by TNRCC, Segment 0823 has a segment classification of Water Quality Limited by reason of being a public water supply reservoir, with designated water uses of contact recreation, high quality aquatic habitat, and as a public water supply. Lewisville Lake has a good water quality status with only a

few violations in levels of dissolved oxygen and sulfates and in levels of orthophosporus near the dam.

Segment 0822, the Elm Fork Trinity River below Lewisville Lake dam to its confluence with the West Fork of the Trinity River in Dallas County, has the same designated uses as Segment 0823. In 1999, this segment was included on the Clean Water Act, Section 303(d) List of Texas water bodies that did not meet water quality standards that was submitted to the Environmental Protection Agency (EPA). At that time, TNRCC's summary of the segment stated that, "Several instances of use non-attainment occur through the upper 15 miles. The aquatic life use is only partially supported due to depressed dissolved oxygen concentrations, and not supported because the mean dissolved lead concentration exceeds the chronic aquatic life criterion. The fish consumption use is not supported because mean dissolved lead concentration exceed the human health criterion. Potential influences on dissolved oxygen include hypolimnetic releases from Lewisville Lake, and municipal wastewater discharges. Lead apparently originates from unidentified nonpoint sources."

In addition, Segment 0824, the Elm Fork Trinity River above Ray Roberts Lake was also classified as Water Quality Limited in 1999 due to water quality standards violations and included on this 303(d) list. In the lower eight miles of the segment, the mean dissolved lead concentrations supposedly exceeded the criteria established to protect aquatic life from chronic exposure. Since that time, both Segments 0823 and 0824 have been removed from the 303(d) list for 2000. This is because further analyses by the TNRCC have determined that the heavy metal data upon which the segments were initially listed was in error. Also, the water being released from Lewisville Lake is no longer coming from the lake's hypolimnetic zone. These results seem to indicate that there are no agency identified water quality problems in Lewisville Lake or in the river reaches above or below the lake at this time.

Intense development has occurred in the vicinity of Lewisville Lake and further development is planned in the future. This urban development has had the impact of increasing concentrations of sediments, metals, nitrogen and phosphorous in storm water runoff. Additionally, urban development causes a change in the runoff travel time, an increase in the peak flow and an increase volume of runoff as the percentage of impervious surfaces within the watershed increases. As an indication of the intense development currently occurring in Texas, EPA's Storm Water General Permit Notice of Intent (NOI) Database currently lists approximately 34,000 construction sites in Texas that have filed for coverage under the General Construction Permit. Approximately 720 permits have been issued in Denton County and 270 of these permits have been issued in the area immediately surrounding Lewisville Lake.

The NPDES permit guidelines should be adhered to in both the construction and the operational stage of all developments within the Lewisville Lake study area. Currently, it is common practice to loosely adhere to the guidelines required in the permits promulgated by EPA. Application of the guidelines set out in these permits should mitigate adverse impacts future development activities would have on water quality in Lewisville Lake.

An additional water quality issue at Lewisville Lake that has raised public concern in recent months has been the presence of Methyl Tertiary Butyl Ether (MTBE), a gasoline additive, in the water. A major source of this compound is its injection into the lake's water via the exhaust system of two-stroke boats and personal watercraft (jet skis) motors. Presently, the Environmental Protection Agency (EPA), the primary Federal agency responsible for water quality management, has placed MTBE on the drinking water Contaminant Candidate List for further evaluation to

determine whether or not regulation with a National Primary Drinking Water Regulation is necessary. As an interim measure, in an advisory dated December 1997, the EPA recommends that communities with drinking water that is contaminated with MTBE control levels to prevent adverse taste and odor (i.e., 20 to 40 parts per billion (ppb)). The advisory further states that, "managing water supplies to avoid the unpleasant taste and odor effects at levels in this range also provides protection against any potential adverse health effects with a very large margin of safety." Based on water samples collected in the summer of 1999 and preliminary results presented by Anne Lee, a graduate student from the University of North Texas, the levels of MTBE detected in the water at Lewisville Lake range from a low of 0 ppb to a high of 16.7 ppb, well under the EPA advisory levels. Studies conducted by TNRCC and the United States Geological Service in August and September of 1999, sampled 45 lakes in Texas with mid-lake samples and reported that 75% of the lakes showed MTBE levels that were "barely detectable". The level of MTBE reported for Lewisville Lake as a result of that study was 1.14 ppb. In addition, sampling by the Texas Parks and Wildlife Department (TPWD) near the I-35 bridge across Lewisville Lake found MTBE levels of 9 ppb.

Since last summer, the EPA has recommended a number of actions to enhance and improve public health protection in regards to MTBE. The first of these actions is reducing or phasing out the use of MTBE as an additive in gasoline, but no timetable has yet been determined. Additionally, the EPA intends to publish a secondary drinking water standard for MTBE based on taste and odor. The agency is currently circulating the internal draft document for this standard. However, until such time as the draft is approved and becomes finalized, the agency is unwilling to release information on what level is being proposed for the recommended standard. Finally, the agency has adopted an Unregulated Contaminant Monitoring Rule which requires that all large public water systems (PWSs), and a representative sample of small PWSs, monitor and report MTBE beginning in 2001. In the meantime, the Texas Natural Resource Conservation Commission, in a news release dated October 14, 1999, indicated a taste and odor threshold for MTBE of 15 ppb with an estimated health effects level of 240 ppb. The USACE will continue to take its lead from the EPA and the Texas Natural Resource Conservation Commission, the primary agency responsible for water quality management at the state level, as additional information on the effects of MTBE becomes available and/or standards are set for MTBE in raw water supply.

Socioeconomic Resources

Lewisville Lake is located in southeastern Denton County, one of the fastest growing portions of the Dallas-Fort Worth metropolitan area. The project serves as a water supply, flood control, and recreational resource for a large portion of the North Central Texas region. The 16 counties included in the North Central Texas Council of Governments (NCTGOC) region had a combined population of 5,119,950 in April 2000. The region added a record 160,750 new residents in 1999. This total represents an increase of 19.7 percent over the 1990 population of 4,111,750. The decade has brought over one million new faces to the region, with 70 percent of that growth occurring over the last five years. The four core counties around Lewisville Lake, Collin, Denton, Dallas and Tarrant, captured 85 percent of all regional growth. The significance of the population trends and projections of the Lewisville Lake area to this document is that a tremendous demand for recreational opportunities has been created by the population growth.

PROPOSED WATER-RELATED RECREATION DEVELOPMENT

A major concern of the proposed water-related development plans is the question of whether the requests fall within the carrying capacity limits set forth by the Lewisville Lake Future Water-Related Development Policy which was included and fully analyzed in the PEA. Other associated activities, such as those listed under the individual project descriptions below, are activities that are currently authorized by the USACE in association with water-related development in accordance with the master plan and development policies and guidelines including the land use allocation/classification system.

Carrying Capacity

For the purposes of this document, water-related recreation use development consists of three activities - marinas, boat launch ramps, and dry stacked storage – which have potential to affect the carrying capacity on Lewisville Lake. Marinas impact vessel carrying capacity at a rate of one vessel on the water for every 10 stored either in wet slips or in dry stacked storage. Boat launch ramps with their associated parking lots have been determined to impact vessel carrying capacity at a rate of one vessel per vehicle and trailer parking spot. As part of the WRRUS (1999), Lewisville Lake was divided into three zones - Zone A, Zone B, and Zone C (Figure 2). Based on data collected as part of the WRRUS, the Lewisville Lake Future Water-Related Development Policy, dated February 1999, established carrying capacities (capacity limits) for each of the zones in terms of the number of vessels (any boat, motorized or non-motorized) it could be expected to accommodate while maintaining a reasonable level of resource protection, safety, water quality and user satisfaction. The following table depicts the carrying capacity of each zone per vessel as described in the proposed requests per zone at the time of the PEA and the proposed requests currently.

Table 1. Zone Carrying Capacity (per vessels)

Zone	Existing Load	Currently Authorized[1]	Total Load	Carrying Capacity	Currently Available	Requested During PEA	Requested Currently
A	534	97	631	631	0	240	0
B	141	5	146	192	46	146	46
C	61	0	61	289	228	380	228
Totals	736	102	838	1112	274	766	274

[1] But not yet constructed

Zone A is the most congested zone. Currently, additional wet slips and dry stack storage units equaling 97 vessels are authorized. These 97 additional authorized vessels combined with the existing load of 534 vessels equate to the carrying capacity of 631 vessels. Allowing more new development (i.e., wet slips, dry stack storage units, boat ramps, boat ramp parking spaces) within this zone would only increase boat congestion and water safety concerns. USACE will grant no further authorizations for development of wet slips, dry stack storage units, boat ramps, or boat ramp parking within Zone A.

Zone B currently has an additional 5 vessels of authorized development projects that when combined with the existing load of 141 vessels equates to a total of 146 vessels. With a carrying capacity of 192 vessels, it has been determined that Zone B could accommodate 46 more vessels

and, per the governmental policy analyzed in the PEA and approved by execution of the Finding Of No Significant Impact (FONSI) on 30 September 1999, USACE can authorize development equaling 46 more vessels in this zone.

Zone C currently has an existing load of 61 vessels and no currently authorized projects affecting carrying capacity. With a carrying capacity of 289 vessels, Zone C could accommodate 228 more vessels. As with Zone B, USACE has the authority to authorize development equivalent to 228 vessels in this zone.

Any proposed boat rental operations would have to fall within a requesting entity's authorizations for marina slips or boat launch ramp and associated parking space facilities. It would be the responsibility of the requesting entity to provide the USACE with documentation of their compliance with carrying capacity limits prior to issuance of any USACE real estate instruments or approval for this type of activity.

Project Descriptions in Zone B (Figure 2)

Dallas Corinthian Yacht Club (Appendix A) - The Dallas Corinthian Yacht Club is a member owned and member operated sailboat marina located on the eastern shore of old Lake Dallas. The Club's proposed 10-year development plan projects consist primarily of improvements to make the marina more useable and to accommodate additional membership.
Proposed development includes:

a. Floating structures and improvements:
   - Additional 100 rental wet slips (**equates to a 10 vessel impact**)
b. On shore structures and improvements:
   - Addition of a high water concrete boat launch ramp to be utilized only when the existing boat ramp is inundated, so it does not count against the carrying capacity of Zone B
   - Raise the top of present earthfill and rock breakwater with additional rock
   - Reinforce present harbor pole seawall
   - Dredge area starting at present docks 3,4,5 and 6 back 50 feet toward shore
   - Raise concrete pad surrounding jib crane
   - Build rock material breakwater from east shore bank out to west

Lakeview Marina in Willow Grove Park (Lake Dallas Boat Company) (Appendix B)- Lakeview Marina is an existing marina located on the west side of the lake and is adjacent to the north boundary of Willow Grove Park. It is the oldest marina on the lake and was constructed on the original lake, Lake Dallas, in the 1930's. Lakeview Marina's 10-year development plan includes:

a. Floating structures and improvements (to cover approx. 3.6 acres of surface water):
   - Additional 250 boat slips (**equates to a 25 vessel impact**)
   - Add floating breakwater
   - Add floating restrooms and shower facilities
   - Floating restaurant (hamburger/sandwich place)
   - Rebuild (replace) older docks as needed with the ten year plan
c. On shore structures and improvements:
   - Resurface roads and parking lots
   - Add security gates to marina area entrance roads
   - Gravel boat trailer storage area
   - Close existing road

- Plant trees and landscape around marina
- Build dry boat storage building
- Fence trailer storage
- Build new marine service center
- Add marine travel lift
- Build restroom and shower facilities (on land)

Willow Grove Park (City of Lake Dallas) **(**Appendix C**)**– The City of Lake Dallas currently maintains Willow Grove Park under a letter of permit from USACE, Fort Worth District. The park is located on the west shore of the Elm Fork arm of the lake. The city's 10-year development plan includes:

a. one-lane boat ramp with an 11-space parking lot (**equates to an 11 vessel impact)** Willow Grove Park (City of Lake Dallas)
b. Extend existing road system and pave existing road
c. Pave existing trail
d. Replace existing restroom and add another
e. Replace existing picnic tables, as needed, add additional ones, build roof shelters for all picnic tables
f. Build large pavilion on existing concrete pad
g. Construct a boardwalk/pier
h. Construct a portable building for food concession
i. Install two additional ball fields
j. Develop a swimming area with the addition of gravel and sand
k. Add additional parking and pave existing parking area
l. Add a playground

Project Descriptions in Zone C (Figure 2)

Proposed Marina in Wynnewood Park (City of the Colony) (Appendix D) – The City of The Colony is proposing construction of a new marina off the north end of Wynnewood Park, an approximately 650 acre park located on the eastern shore of Lewisville Lake. The 10-year development plan includes:

a. Floating structures:
    - 840 wet slips **(equates to an 84 vessel impact)**
    - Shipstore/gasoline service
    - Construct retaining wall
    - Construct floating breakwater
    - Excavation/dredging of estimated 5.1 acre inland lake
b. On shore structures:
    - Restaurant
    - Boat ramp for use by marina boats only
    - Parking area
    - Helipad
    - Dry boat storage area
    - Development of a beach area

Proposed Marina in Hidden Cove Park (City of the Colony) (Appendix D) - Hidden Cove Park was previously named Lake Lewisville State Park. The park, which contains approximately 600 acres at the 522 ft. msl conservation pool level, is located on the eastern shore of the lake, between

Hackberry and Cottonwood creeks. The park is leased and operated by the City of The Colony, which has numerous development projects planned within the next 10 years. These plans include:

a. Floating structures (3 alternative sites are under consideration for a proposed marina with floating structures covering approximately 5 acres of surface water)
   - 350 slips **(equates to a 35 vessel impact)**
   - Floating breakwater
   - Courtesy dock

b. On shore structures:
   - Boat ramp with 25 space parking lot (**equates to a 25 vessel impact**)
   - Boat repair shop
   - Store/café
   - Dry boat storage area (17,800 sq. ft.)

Proposed Marina in Cottonwood Park (Town of Little Elm) (Appendix E) – The Town of Little Elm is proposing construction of a new marina in their lease area of Cottonwood Park located on the north shore of the Cottonwood Creek arm of the lake, south of the Town of Little Elm. The 10-year development plan proposed for the marina includes:

a. Floating structures (would cover approximately 23 acres of surface water):
   - 840 wet slips **(equates to an 84 vessel impact)**
   - Ships' store
   - Offices
   - Fuel dock
   - Pump-out facility
   - Restrooms
   - Repair and maintenance facility
   - Restaurant with courtesy slips
   - Boat rental
   - Yacht sales dock
   - Floating breakwater
   - Earth and rock breakwater

b. On shore structures and improvements:
   - Fuel storage tanks
   - Recreational vehicles parking
   - Roads and parking area
   - Gate house and access barriers
   - Restroom and shower facilities
   - Storage facilities
   - Service hoist
   - Night watchman residence
   - Improved electrical system
   - Dredging
   - Pipe and lift type sewer system

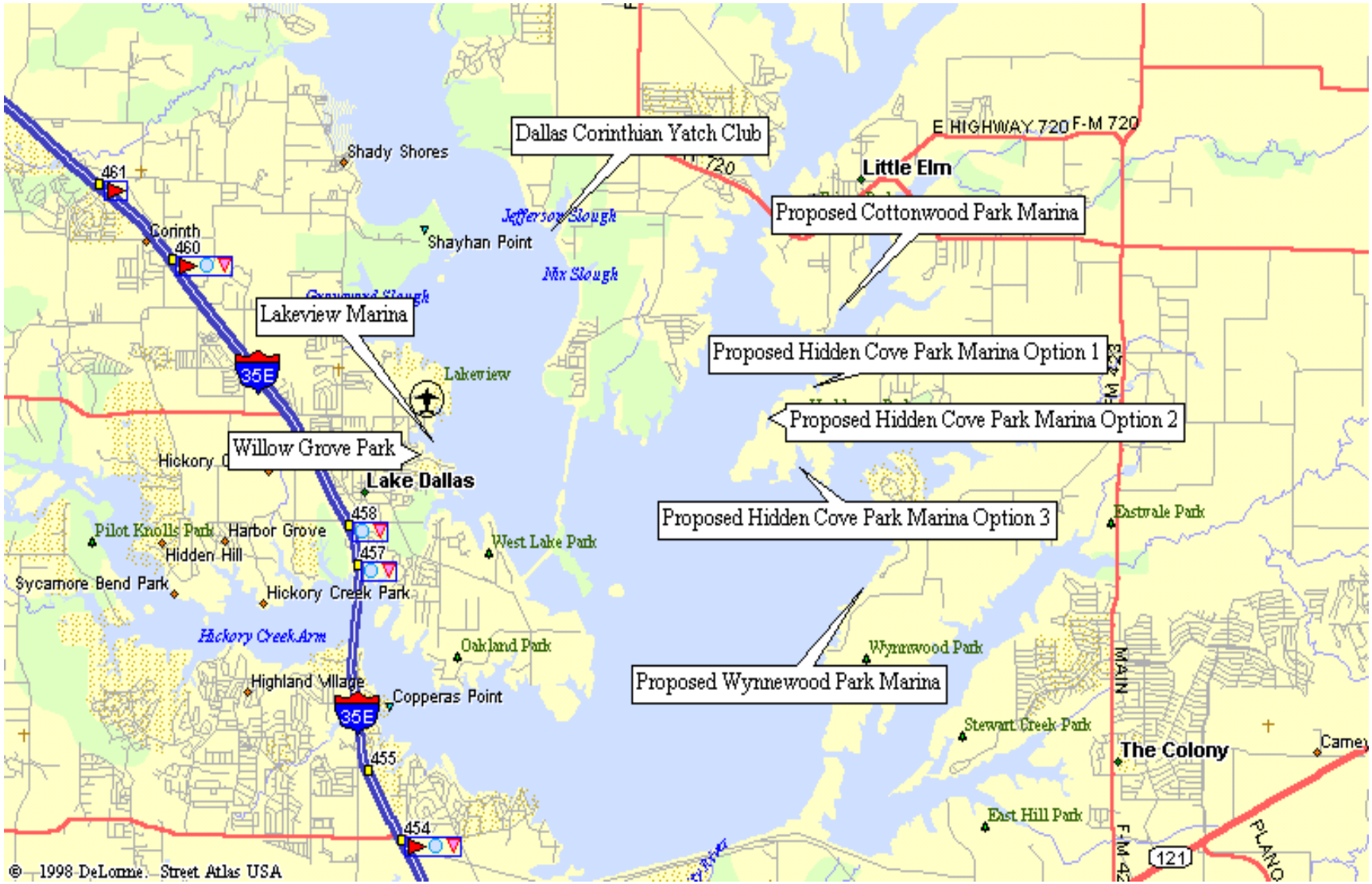


Figure 3. Lewisville Lake Proposed Water-Related Development Map

ALTERNATIVES

The proposed water-related recreation development actions described above are limited in the number of viable alternatives that can be developed for analysis. First of all, their location must be on, or adjacent to, water. Secondly, in the case of lakes or reservoirs under the jurisdiction of USACE, they must be located in designated recreation areas. Thirdly, in the case of marinas, the choice of location is dictated by provision of some measure of natural protection and water depth to make the initial cost of construction and operation feasible. Finally, the zone carrying capacity constraints established for Lewisville Lake further reduce the number of sites suitable for consideration as alternative locations. Viable alternatives can also consist of modifying the size or configuration of a proposed action. Since this EA is being tiered to the previously published PEA, which analyzed both a "no action" alternative and a larger scale alternative for each of the water-related recreation development actions proposed in this document, no further discussion of those alternatives is included in this EA.

As noted in the Carrying Capacity section of this document, marinas impact vessel carrying capacity at a rate of one vessel on the water for every 10 stored either in wet slips or in dry stacked storage. Boat launch ramps with their associated parking lots impact vessel carrying capacity at a rate of one vessel per vehicle and trailer parking spot. An infinite number of alternatives could be developed using these criteria, ranging from one that would include adding 274 parking spaces with corresponding boat ramps and no wet slips and/or dry stacked storage, to one adding 2740 wet slips and/or dry stacked storage with no additional parking spaces with associated boat ramps, to various combinations of the two, as long as there is appropriate distribution to meet the zone carrying capacity limits. The environmental consequences section of this EA includes evaluation of impacts for a range of options to meet the authorized carrying capacity of 274 vessel equivalents, with emphasis on the water-related recreation development as proposed by the sponsoring entities.

ENVIRONMENTAL CONSEQUENCES OF PROPOSED DEVELOPMENT

Impacts to Geology and Soils

Implementation of the proposed recreation development activities would have no impact on the area's geological resources and would not cause any impacts to farmlands since there are no farmlands within the area of the proposed development projects.

The proposed projects would utilize existing topography and soils where possible. However, it is anticipated there would be minor impacts to the topography and soils within the project areas caused by the earth moving activities necessary to construct the projects. Some of the proposed actions would involve activities in waters of the United States (the lake) such as dredging, side casting of material, building of breakwaters, boat ramps, etc., resulting in impacts to lake soils. These activities may require Section 404 permits under the Clean Water Act and all terms and conditions of any resulting permits must be met. These permit requirements would also be included as conditions to any real estate consent/instrument along with any other mitigation required by the USACE. The impacts to lake soils from these activities are considered minor if the terms and conditions of the Section 404 permit, as well as all other applicable regulations, policies, standards and guidelines are met.

In addition, implementation of the proposed actions would cause minor temporary impacts to adjacent lands during construction. Disturbance to existing topography and soils from construction

would be kept to the minimal amount and size of disturbance possible and the use of best management practices to reduce soil erosion and runoff would be required. Following construction, disturbed soils would be stabilized with native vegetation.

The construction of new marinas, accompanied by ancillary development of on-land facilities, would cause more impacts to soils and topography than alternatives consisting of additional boat ramps and parking spaces. However, the major difference between the range of alternatives is the location of the impact and not the extent of the impact itself. Additional boat ramp lanes and associated parking spaces would impact the topography and soils at the shore line and on land, respectively, while the addition of new marinas or increased numbers of wet slips at existing marinas would cause impacts to shoreline and lake soils. It has been determined that implementation of the proposed actions would not result in significant adverse impacts to geology, topography, soils, or farmlands over the long term, as long as the terms and conditions of any Section 404 permits, as well as all other applicable regulations, policies, standards and guidelines are met.

Impacts to Land Use

All of the proposed projects are located in areas designated for intensive or future intensive recreation uses. These projects comply with the requirements of intensive or future intensive recreation uses as identified in the Lewisville Lake Masterplan, Design Memorandum No. 1C, dated June 1985. Therefore, implementation of these proposed actions would not have a significant adverse impact on the project area land use.

Impacts to Water Quality

Implementation of the proposed actions would result in temporary adverse impacts during the construction phase of the projects, but it is anticipated that these impacts would be short-term in nature. The principal water quality impacts associated with construction are those caused by dredging, water surface and subsurface structures, soil erosion, sedimentation, and siltation. Other possible impacts associated with construction activities include accidental fuel and oil spills and release of waste from the site. These potential impacts would be minimized or mitigated by implementation of erosion control and spill prevention strategies during the construction phase. These strategies are required as part of the EPA's General Construction Permits for Storm Water Discharges from Construction Activities in Region 6 and include such activities as silt fences, hay bale check dams, rock check dams, velocity dissipaters and construction entrances.

The primary adverse water quality impacts associated with operation of the proposed facilities include the potential for soil erosion and runoff of pollutants such as fuel, oil, pesticides, herbicides, fertilizers, and other wastes into the lake from the site. Operation of the site should minimize adverse impacts to storm water discharges through application of appropriate best management practices. Thorough application of the appropriate storm water permits should mitigate possible adverse impacts resulting from operation of the facilities. In addition, planting vegetation to help stabilize the soil and serve to trap pollutants and hold runoff would be required at the site.

The University of North Texas study at Lewisville Lake has documented that levels of MTBE are higher in locations near marinas and high use boat ramps following peak use weekends and holidays in the summer boating season. Given that the major source of MTBE in surface water is its injection into a lake's water via the exhaust system of boats, it would only make sense that this is

the case. The Corps has determined that in order to alleviate concern for cumulative impacts to levels of MTBE that might result if two or more of the proposed water-related recreation facilities are concentrated in close proximity to one another, two sites in Hidden Cove Park, identified as "Option 1" and "Option 2" on Figure 3, are being removed from further consideration as future marina sites. Location of a marina at either of these sites could cause potential cumulative impacts given their proximity to the Cottonwood Park marina proposed by the Town of Little Elm.

Based on these findings, it has been determined that there would be no significant adverse impacts to the water quality of Lewisville Lake from implementation of the proposed actions, except on a temporary basis. However, as noted earlier in this document, the USACE will follow the lead of the EPA and TNRCC on the issue of MTBE and, if there are ever primary water standards established for MTBE which are below those levels detected in the water of Lewisville Lake, the USACE will act in cooperation and coordination with those regulating agencies and the lake's water supply entities to find a solution to the problem.

Impacts to Air Quality

None of the individual projects being proposed would involve a significant or substantial air pollutant emission source. However, an increase in the recreation development would be expected to attract additional boats and vehicles to these areas, which would increase air pollutant emissions from motors in the immediate vicinity of the proposed project sites. However, it is reasonable to assume that, during a majority of the time, the proposed projects would not substantially increase the number of vehicles on Federal land around the lake or the number of boats on the lake. It stands to reason that most individuals wanting to use the lake would visit the lake with or without these projects. Development of some of these projects would merely divert some visitors from other recreational facilities around the lake to these facilities rather than causing a substantial number of additional individuals to visit the lake that would not have otherwise done so. Based on this assumption, the proposed projects are not expected to significantly impact air quality around Lewisville Lake.

The exception to this might be on high use summer weekends and holidays when the visitation at the parks is already high and the number of vessels using the lake might be expected to approach peak levels. Attempting to predict air pollutant emissions from boats on the lake is beyond the scope of this EA, but it would be expected that any increase in vessel numbers would increase the air pollutant emissions in the area of the lake. As with the issue of water quality, the USACE would follow the lead of the EPA and TNRCC if there comes such a time that regulations are established to control emissions from boat motors. In this event, the USACE would work in coordination and cooperation with those agencies to properly address the problem and identify a solution.

Based on the above findings, it is not anticipated that implementation of any of the range of water-related recreation development alternatives would result in significant adverse air quality impacts.

Impacts to Aquatic Resources

Dallas Corinthian Yacht Club – The proposed additional 100 slips would extend from the existing docks with the additional acreage of surface water requested for these slips equal to approximately 1.1 acres.

Lakeview Marina in Willow Grove Park – Proposed floating structures would cover approximately 4 acres of surface water not including the floating breakwater, which did not have a defined measurement.

Proposed Marina in Wynnewood Park – The proposed floating structures and breakwater would encompass approximately 35 acres of surface water and 5.1 acres of what would be a connected inland lake. Excavation of the inland lake will be to a level of 499 msl. The average depth of excavation required is estimated to be 40 feet, resulting in the excavation of approximately 330,000 cubic yards of material. In addition, dredging along 1400 feet of shoreline is expected to be limited to an average distance of 35 feet from shore and an average depth of 10 feet. This should result in the dredging of about 20,000 cubic yards of material. Except for this area to be dredged, the rest of the marina area within the breakwater already has a minimum depth of 499 msl, with average depths to about 485 msl. It is estimated that the dredge of the material to create the inland lake will compensate for the water area displaced by the breakwater by a factor of 2:1. This is important to note since it is a factor the USACE would review to make sure that there would be no loss of flood storage capacity.

Proposed Marina in Hidden Cove Park – The City of the Colony has identified three potential sites within Hidden Cove Park for inclusion of a marina, however, the two northern sites have been removed from further consideration for marina development because of their close proximity to the marina proposed at Cottonwood Park by the Town of Little Elm. The proposed floating structures would encompass approximately 9 acres of surface water, which includes the construction of a floating breakwater.

Proposed Marina in Cottonwood Park – The proposed floating structures would encompass approximately 25 acres of surface water.

Implementation of any of the range of identified alternatives has the potential to impact existing aquatic resources and wetlands along the shoreline and on shore. Onsite wetland determinations and delineations would be necessary to identify the presence or absence of jurisdictional wetlands and, if found, to verify the location and extent of wetlands in the affected areas before proceeding with implementation of the any of the individual projects. Impacts are not likely to be significant but, in cases where a jurisdictional determination is made under Section 404 of the Clean Water Act, a Nationwide Permit, at minimum, would be required. In cases where a wetland would be adversely impacted but no permit is required, the USACE would comply with Executive Order (EO) 11990 and ensure "no net loss of wetlands." Documentation of compliance with Section 404 of the Clean Water Act and/or EO 11990 would need to be provided along with final plans and specifications for USACE environmental and master plan review prior to the issuance of any real estate instruments.

Construction of water surface and subsurface project components (e.g., wet slips, boat ramps, courtesy docks, floating breakwaters, floating structures, etc.) would result in temporary adverse impacts to aquatic habitat during the construction phase of the proposed projects, but it is anticipated that these impacts would be short-term in nature. It is also anticipated that any

displaced aquatic resources would return and reestablish after project construction is completed. It is not anticipated that operation of these facilities would result in significant long-term impacts. In fact, as in the case of marina slips, docks, etc., the increased amount of subsurface structure often attracts certain species of fish looking for cover.

Construction and operation of all other on shore projects are not anticipated to result in any adverse impacts to aquatic resources.

Impacts to Terrestrial Resources

Dallas Corinthian Yacht Club – The proposed on shore structures and improvements would be constructed along a rocky, sandy shoreline and a steep slope with herbaceous non-wetland vegetation. The wooded upper end of the slope would be outside the area identified for proposed actions. Therefore, the implementation of the proposed actions is not expected to result in significant impacts to vegetation resources.

Implementation of the proposed actions would not be expected to adversely impact wildlife species common to the area, expect on a short-term basis during the construction phase. Resident species are already tolerant of man's activities so the proposed actions are not expected to result in significant impacts to any resident wildlife species.

Lakeview Marina in Willow Grove Park – The proposed onshore amenities would not have an impact on the vegetative habitat due to the existing development, which includes mowed and maintained areas with abrupt shoreline edges. It is not anticipated that there would be any impact to resident wildlife species as a result of implementation of the proposed actions except for a possible short-term displacement during the construction phase.

Willow Grove Park – The proposed site for the boat ramp is a well-mowed site with scattered oaks, willows, and herbaceous layer. The additional parking includes the addition of 11 units to an existing parking facility. Implementation of the proposed project is not expected to have significant impact on either existing vegetation or wildlife species.

Proposed Marina in Wynnewood Park – Implementation of the proposed onshore structures involve an area of approximately 3 acres, in addition to the 5.1 acres that will be impacted by dredging of the proposed inland lake. The terrestrial area to be impacted is a relatively flat grassy field with no trees. Primary grass species are bermudagrass and johnsongrass and the sparse tree species in the area are primarily hackberry, elm, willow, and cottonwood. It is anticipated that there would be adverse impacts to existing vegetation as a result of implementing the proposed actions and, even though the quality is low, these would have to be mitigated for as outlined in the mitigation section of the PEA. In addition, the area would be turfed and landscaped following completion of the construction phase.

Construction actions on roughly 8 acres of low quality habitat would result in the displacement of some resident species, including coyotes, opossums, armadillos, striped skunks, and raccoons. The wildlife that remain or that would be attracted to the area are those species which can adapt to a modified natural habitat and are tolerant of man's activities, such as squirrels, rabbits, migratory songbirds, and various rodents and amphibians. The proposed project is not expected to have a significant impact to any resident wildlife species.

Proposed Marina in Hidden Cove Park –Because of current periodic maintenance in the park, such as regular mowing, and previous disturbance of the natural mid-story and understory, impacts to vegetation by the proposed actions are not considered significant. The activity would result in minimal clearing of previously undisturbed areas.

The proposed activities would likely result in the displacement of some resident species to adjacent undeveloped tracts of land that would provide them with the habitat they need to survive. The species that would remain are those species that can adapt to a modified natural habitat and are tolerant of man's activities. The proposed action is not expected to result in significant adverse impacts to wildlife.

Proposed Marina in Cottonwood Park – It is not anticipated that implementation of the proposed actions will have a significant impact on either existing vegetation or resident wildlife in the area. In the area identified for construction, the park is already developed with a boat ramp and parking lot and maintained by frequent mowing. Resident wildlife species might be impacted in the short-term, during the construction phase, but it is not anticipated that there will be any long-term impacts to wildlife.

In general, any of the range of alternatives that include construction of on-land project facilities would adversely impact the existing vegetation and wildlife, at least on a temporary basis. The significance of the impact would depend on the quality of the existing habitat, the amount of habitat impacted, and whether the impact would be short- or long-term in nature. For example, the addition of parking spaces to a parking lot associated with an existing boat ramp would probably not have the same degree of impact as the addition of a new boat ramp and associated parking lot in an area where there is none currently. In much the same way, the addition of wet slips to an existing marina would have almost no impacts to an already developed site, but the construction of a new marina, with its associated on-land facilities would be expected to have greater impact. Impacts to terrestrial resources, whether vegetation or wildlife, would be specific to each site in question.

Impacts to Threatened or Endangered Species

Based on the studies and evaluations conducted thus far, the proposed projects are not anticipated to result in any adverse impacts to threatened or endangered species.

Impacts to Aesthetics

The proposed projects do involve new facilities that would be viewable from parts of the lake and shoreline. There are relatively few Federal guidelines that define significant adverse aesthetic impacts. Aesthetic impacts are often left to the discretion of the general public. Overall, implementation of the proposed actions is not anticipated to cause significant adverse aesthetic impacts. Final plans and specifications submitted for USACE approval would be required to blend with existing facilities and comply with the lake and/or the given parks architectural theme.

Impacts to Recreation

Current water-related recreation uses of sites specifically identified for expansion or construction of new facilities would be adversely impacted, but, generally, implementation of the proposed water-related recreation use facilities would have a beneficial impact on the recreation

activities in and around Lewisville Lake by providing additional recreation opportunities, if carrying capacities are maintained.

Impacts to Socioeconomic Resources

Based on the studies and evaluations conducted thus far, the proposed projects are not anticipated to result in any significant adverse impacts to socioeconomic resources.

Hazardous, Toxic and Radioactive Waste Impacts

Since data was collected for a Hazardous, Toxic, and Radioactive Waste (HTRW) Initial Assessment as part of the PEA last year and included the areas under consideration for water-related development activities in this document, it was determined that no further HTRW assessment was necessary. Specifics on the HTRW assessment can be found as Exhibit 9 in the PEA which, as noted earlier, is available for viewing on the Fort Worth District Internet Home Page at http://www.swf.usace.army.mil.

Impacts on Noise

None of the individual projects being proposed would involve a significant or substantial noise source. However, the overall marina developments would attract visitors, vehicles and boats to site-specific areas which would result in an increase to ambient noise levels at those sites. It is difficult to accurately predict future noise levels from visitors using the various recreational facilities being proposed as part of the overall marina developments and especially difficult to predict noise levels from boats on the lake from these marinas and/or boat ramps. This would require an extensive inventory of the number of boats and types of boat motors being used, but it is anticipated that noise level increases as a result of these new activities would generally fall within the range predicted for various other recreation activities in parks around the lake. Although future noise levels from all of the various projects being proposed as part of the overall water related recreation use facilities could not be predicted, it is not anticipated that these proposed projects would result in significant noise impacts.

Impacts to Floodplains

Executive Order 11988, Floodplain Management, requires that Federal agencies avoid activities that directly or indirectly result in the development of floodplain areas. According to FEMA's most current floodplain maps, most of the proposed projects, or portions thereof, are located within the 100-year floodplain.

The proposed actions cannot increase the base flood elevation to a level that would violate applicable floodplain regulations or ordinances and must comply with current policies and standards. The USACE requires that there be no net loss of flood storage at Lewisville Lake. Therefore, any fill placed within the 100-year flood pool as a result of project construction must be mitigated with excavation in another area of the flood pool with disposition above flood pool elevation of 537 msl in an area approved by the USACE. As long as the proposed projects are designed to comply with this requirement, then no significant adverse impacts to floodplains are anticipated.

Impacts to Cultural Resources

All of the proposed projects are located upstream of the Lewisville Lake dam, which has had an adequate cultural resources inventory. Of the 146 cultural resource sites located upstream from the dam, only 11 have been determined eligible for the National Register of Historic Places (NRHP).

If no cultural resources are identified within a proposed project's area of potential effects, or if the cultural resources are determined to be ineligible for the NRHP, then a finding of no historic properties affected shall be coordinated with the SHPO. If historic properties (NRHP-eligible cultural resources) are identified which would be affected adversely by the project, then the Advisory Council on Historic Preservation shall be notified, and the SHPO shall be consulted to evaluate alternatives that could avoid, minimize, or mitigate adverse effects on historic properties. Such alternatives can include mitigation through data recovery.

Determinations of effects on cultural resources for each action would be accomplished on a case-by-case basis when applicants provide their final plans and specifications for USACE environmental and master plan review prior to the issuance of any real estate consent/instrument.

RESULTS OF AGENCY COORDINATION

In accordance with coordination requirements set forth in NEPA, copies of the EA were mailed to the Texas Parks and Wildlife Department (TPWD), the United States Fish and Wildlife Service (USFWS), the Environmental Protection Agency, Region 6 (EPA), the Texas Natural Resources Conservation Commission (TNRCC), and the Texas State Historic Preservation Office at the same time Notices of Availability are mailed to the general public soliciting their comments during a mandatory 30-day public review period. As a result of this coordination, a letter was received from USFWS applauding the time, effort and finances that went into the WRRUS and PEA in gathering, evaluating, and analyzing data to develop and set a carrying capacity for Lewisville Lake. They encourage the Corps to follow-up the study by monitoring the vessel usage of the lake in the future to determine whether the conditions and assumptions made as part of the WRRUS and PEA are adequate to predict future conditions and to apply what was learned to adapt the model as needed for studies on other Corps lakes. A letter was also received from TNRCC recommending that actions be undertaken to prevent surface and groundwater contamination during and after construction. This will be accomplished by requiring the sponsoring entity to meet all applicable regulations in the construction and operations of facilities on Federal lands at Lewisville Lake and by applying the best management practices as outlined in the PEA.

CONCLUSIONS

The findings of the PEA concluded that requests affecting the number of vessels on the lake would exceed the carry capacity established by the Corps in the Lewisville Lake Future Water-Related Development Policy. In order to avoid exceeding the carrying capacity of the lake, the USACE developed an alternative on behalf of the various entities, which authorizes the increase of 274 vessels on Lewisville Lake - 0 vessel increase in Zone A, a 46 vessel increase in Zone B, and a 228 vessel increase in Zone C. This alternative with the established carrying capacity was fully assessed in the PEA while the individual proposals for water-related recreation development originally submitted by the various entities were removed from further consideration because they did not meet carrying capacity or zone criteria.

This environmental assessment (EA), which is tiered to the Lewisville Lake PEA, covers proposed water-related recreation development activities that fall within the carrying capacity established in the PEA. The water-related recreation development plans proposed by the various entities affecting carrying capacity include additions of slips to existing marinas, development of 3 new marinas, and the construction of two boat ramps and associated parking lots.

Based upon the conclusions of potential impacts resulting from the multiple entities' proposed activities as presented in this EA, the carrying capacity policy authorized in the PEA, and the results of the public comment period, the activities are anticipated to result in no significant adverse impacts, either individually or cumulatively, as long as the projects are designed to adhere to applicable regulations, policies, mitigation requirements, standards, and guidelines. These activities are recommended for a Finding of No Significant Impact (FONSI) and are being included in the supplement of the Lewisville Lake Master Plan for potential implementation. The FONSI has been developed and is being recommended for execution.

APPENDIX A

DALLAS CORINTHIAN YACHT CLUB

Pages: 3

Date & Time December 12, 1999

From: Jay T. Colburn
(at 972-867-2561)

To: Stewart

940-497-4485

Company: City of Lake Dallas

Subject:: Letter to Corps requesting additional slips for Dallas Corinthian YC

June 29, 1998

Department of the Army
Fort Worth District, Corps of Engineers
District Engineer,
Attention: CESWF-RE-M
P. O. Box 17300
Fort Worth, TX 76102-0300

To whom it may concern:

The Dallas Corinthian Yacht Club on Lake Lewisville is submitting a request for an increase in the number of docks at our facility. (Lease DACW63-1-94-0639 Lewisville Lake, Texas)

At present we are nearing capacity and are enjoying increases in membership and interest in our club. We therefore are applying for an additional 100 docks for our facility for inclusion in your future planning. We are requesting these docks so as to be included in your evolving plan for the lake.

There is a substantial amount of interest in our lake. We regard it as our lake also and are interested in preservation of this wonderful resource. The lake traffic in our area is much less congested than popularly described recently. We are primarily sailing boats interested in cruising, racing and day sailing. We have some power boats but are not interested in expanding that particular area of dockage. We are not opposed to other facilities being created on the lake as proposed by a couple of nearby towns. Our use of the lake is for the most part quiet, non polluting and does not intrude on others use of the lake. Our wakes are not intrusive.

We happen to be a unique enterprise on the lake. We are older than most of the marinas on the lake having been established in 1956. The Dallas Corinthian Yacht Club is a non-profit organization owned and operated by the membership. We are managed by the Board of Governors who are elected for 3 year terms. The flag officers are elected by the BOG annually. We pay our lease per your terms and ask little in return. We are not a commercial operation and provide the community many services that no other organizations provide.

Over the years we have served the community , at local, state and national levels by our participation. We are part of the USSAIL, Texas Sailing Association, organizations that promote sailing and boating safety as well as providing the rules that are used in competitive events. Our regattas and racing series are open to all those that choose to compete. We host sailing events that attract sailors and their families from many outlying areas. We have hosted the Catalina 22 national competition, Dolphin Sr national competition and many others in the past. We have participated in the racing circuit that attracts boats from many areas of this state and others. We will be hosting a windsurfing instructional meeting shortly open to the public.

Proceeds from our regattas are regularly donated to charitable causes such as American Cancer Society, SPCA, Statue of Liberty Funding, MS and others.
We have provided a meeting place for our Oak Point community and have served as a polling place as well in the past. We have donated to the local fire stations to enable improvement of their equipment. Our committee boat has assisted in rescue operations when called upon. Our members have provided assistance to other boaters in need of help on many occasions. Our facilities have been used by the Sheriff's Department for rescue operations for problems on the lake.

We have routinely offer lessons to teach sailing which are open to the public. We are holding a Red Cross Sailing Instructors course to provide more sailing instructors well founded in safe boat operation. We are also holding Red Cross Sailing instructions open to the public. We have sponsored the UNT Sailing Team providing them with boats and facilities. They in turn hosted collegiate sailing events at the club.
We have sponsored a Sea Scout Troop in the past. Boy Scouts frequently utilize the grounds and facilities for camping and are introduced to sailing as a sport.
The facilities are used by various groups and families for meetings and entertainment upon application.

We own our land and improvements adjacent to the land and water that we lease. The improvements are a clubhouse, caretakers residence, an office shop building for the caretaker and a swimming pool. We regard this a private property much as you would a lakeside residence. Our facilities are open to those who apply for membership and approved by the BOG. We have no restrictions other than character and credit references and an interest in sailing and our club. We do not regard ourselves as a marina.

Please include our request for the additional dock numbers in your planning for the lake use. You might refer to your communication to us dated July 2, 1976. At present we have not finalized the arrangement or modification to accommodate the increased slips. Structure would be comply with the prevailing requirements. We may be inquiring about increasing the water area leased to accomplish this. We do want you to recognize our future plans in your overall plan for the lake.
Thank you,

Sincerely,

Dallas Corinthian Yacht Club
Jay T. Colburn
Commodore, 1998

cc: Dept of the Army
Ft. Worth District, Corps of Engineers
Lewisville/Ray Roberts, Project Office
1801 N. Mill Street
Lewisville, TX 75037-1821

APPENDIX B

LAKEVIEW MARINA

LAKEVIEW MARINA

LAKE DALLAS BOAT CO., INC.

December 1, 1999

Mr. Doug Cox
U S Army Corps of Engineers
1801 North Mill Street
Lewisville, Texas 75057-1821

RE: Revised Ten (10) Year Plan

Dear Mr. Cox,

Enclosed is the Revised Ten Year Development Plan for our marina concession, lease #DACW63-1-88-0550.

We are submitting the enclosed paperwork on the revision on the number of boat slips to stay within the carrying capacity of Zone B. Our new Ten Year Plan number is 250 slips to be built PLUS our existing authorized number of 50 slips. That makes a grand total of 300 slips that we can increase our marina concession.

The enclosed Revised maps are for boat slips, dock locations, size and date to be built. Please use the Original plans and maps for all other projects within our lease proposals.

We wish to delete two of our requests on the Original Plan. We have decided not to annex the Willow Grove Park into our existing lease. We understand that the City of Lake Dallas wishes to keep the lease on this park. The second deletion is on page 3 of our Original Plan under Year 2006 number 2. We will not be adding a new boat ramp.

If you have any questions, call me anytime. Thank you for your consideration into this matter.

Sincerely,

L. M. Drozd
President

LMD/bhd

Enclosures

P.O. Box 397 Lake Dallas, Texas 75065 Metro (940) 321-2675 Fax (940) 497-2525

- REVISED map 1A for location only (marked 2001 on map)

3. Add security gates to marina area entrance roads.
   - See map marked 2000C

4. Landscape – plant trees around the marina area.
   - See map marked 2000D

5. Fence trailer storage area in with locking gate.
   - See map marked 2000E

6. Dry boat storage building (20) spaces, 30' x 11'. Building dimensions 60' x 110', building site has an elevation of 534'.
   - See plans and map marked 2000F

7. Resurface part sections of roads and parking lots.
   - See map marked 2000G

Year 2002 - 2003

1. Add additional new dock (1) with (20) slips. (20) Slips total, sizes 18' x 50'. Covered dock dimensions 108' x 213'.
   - ORGINAL plans marked 2001A
   - REVISED map 1A for location only (marked 2002 on map)

2. Restaurant – (Hamburger / Sandwich place)–. Build at 532' elevation – Floating building. (Can rise with flood water, above 532 ft.)
   - See plans and map marked 2001B

3. Dry boat storage building (40) spaces, 30' x 11'. Building dimensions 60' x 220'.
   - See plans and map marked 2001C

4. Resurface part section of roads and add parking lots.
   - See map marked 2001D

Year 2003 - 2004

1. Add additional new docks (3) with (10) slips each dock. (30) Slips total, sizes 28' x 11'. Covered dock dimensions 34' x 134'.
   - ORIGINAL plans marked 2002A
   - REVISED map 1A for location (marked 2003A)

2. Add additional new dock (1) with (20) slips. Open (sailboat slips), dock dimensions 66' x 153'.
   - ORIGINAL plans marked 2002B
   - REVISED map 1A for location (marked 2003 B)

Year 2008 - 2009

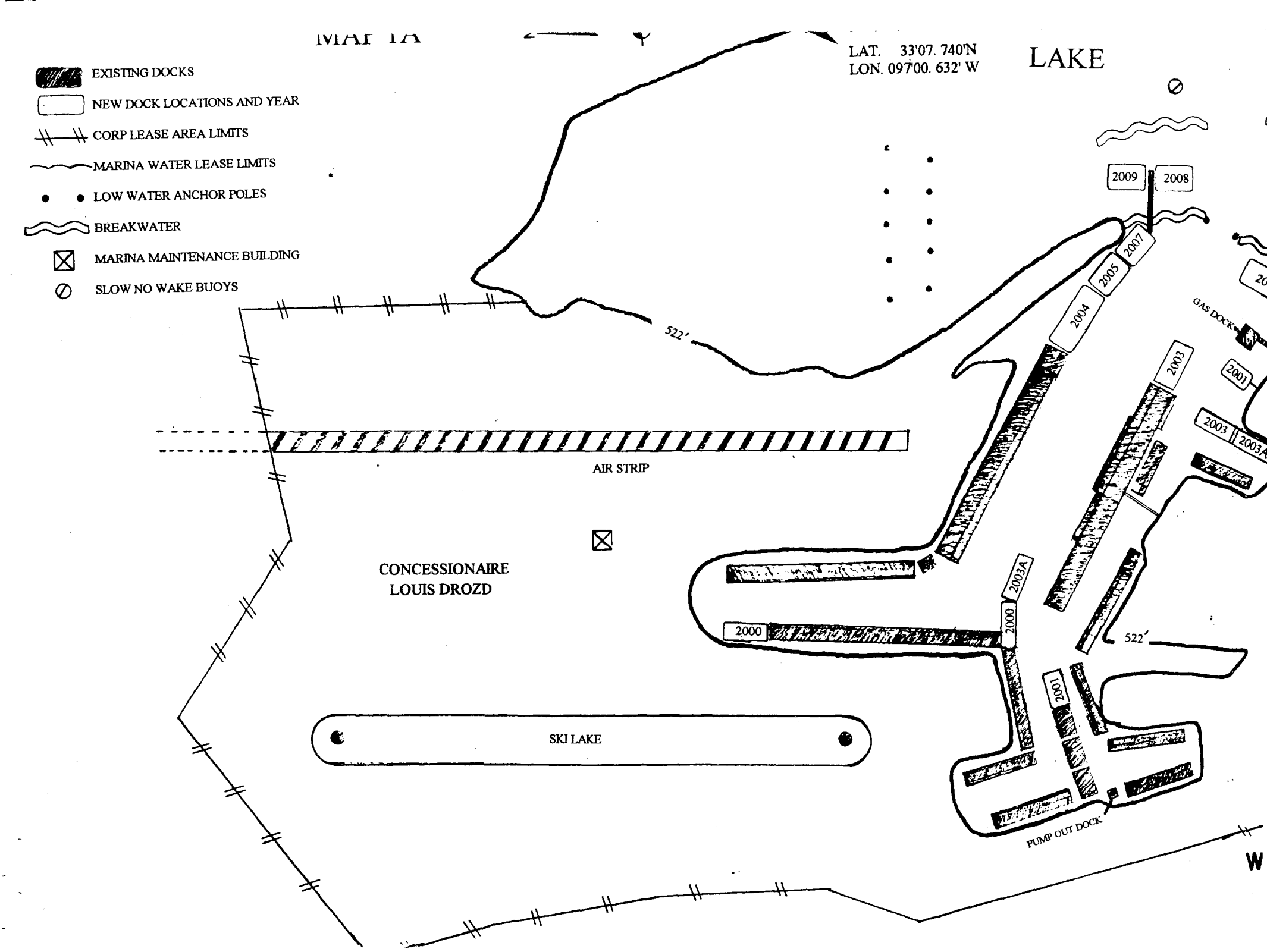
1. Add additional new dock (1) with (20) slips. (20) Slips total, sizes 30' x 12'. Open dock dimensions 66' x 153'.
   - ORIGINAL plans marked 2007A
   - REVISED map 1A for location (marked 2008)

2. Add additional new dock (1) with (20) slips. (20) Slips total, sizes 30' x 12'6". Covered dock dimensions 66' x 135'.
   - ORIGINAL plans marked 2007B
   - REVISED map 1A for location (marked 2009)

Year 2009 - 2010

1. Build dry boat storage building (added to existing building site). (40) Spaces, sizes 30' x 11'. Building dimensions 60' x 220'.
   - See plans and map marked 2008B

2. Build dry boat storage building (added to existing building site). (40) Spaces, sizes 30' x 11'. Building dimensions 60' x 220'.
   - See plans and map marked 2008 C


MAP 1A
LAT. 33'07. 740'N
LON. 097'00. 632' W
LAKE
EXISTING DOCKS
NEW DOCK LOCATIONS AND YEAR
CORP LEASE AREA LIMITS
MARINA WATER LEASE LIMITS
LOW WATER ANCHOR POLES
BREAKWATER
MARINA MAINTENANCE BUILDING
SLOW NO WAKE BUOYS
2009
2008
2007
2005
2004
2003
2003A
2001
2000
2002
522'
GAS DOCK
AIR STRIP
CONCESSIONAIRE
LOUIS DROZD
SKI LAKE
PUMP OUT DOCK

APPENDIX C

WILLOW GROVE PARK – LAKE DALLAS

Lewisville Lake Study Resubmittal
December, 1999

Submitted by:
City of Lake Dallas
Stewart Fairburn, City Manager
303 Alamo
Lake Dallas, TX 75065
940-497-2226 ext 114

This resubmittal is to ensure that Section B of the Lake does not exceed its allowable number of boats (46 additional boats).

Dallas Corinthian has no changes to its submittal and it remains with 100 slips (10 boats). Lakeview Marina has changed its plans (see attached) by limiting the number of slips to 250 (25 boats). It has dropped the plans to annex Willow Grove Park, dropped its plans to expand boat ramp parking and a new boat ramp. The only change that Lake Dallas has is to have only 11 spaces at the boat ramp (11 boats).

Lewisville Lake Use Study

City of Lake Dallas

Willow Grove Development Plans

A. Boardwalk

There is no existing boardwalk at this time.

The future plans would be to build a boardwalk/pier on the more marshy area. This would be good for high water, and would allow viewing of wildlife, and perhaps some fishing. It would be handicap accessible.

B. Parking

Existing parking consists of head-on parking containing about 20 spaces.

The future plans would be to add more head-on parking (about 30 spaces) from the current head-on parking around the oval area. A parking lot may be added to the center section at the end of the oval (90 feet by 90 feet). Trailer and overflow parking could be put in the flat area west of the ball fields (50 feet by 200 feet). Parking would be created at Carlisle to open up the southern portion of the park. A road extension and about 10 car spaces would be required. All parking would be paved eventually.

C. Roads

The current road is gravel.

The future plans would be to pave the road to control dust and ease of maintenance.

D. Pavilions and Picnic Shelters

There are currently 6 picnic tables. Some have significant damage.

The future plans would be to replace the damaged tables and to add tables. These additional tables would be added near the current tables and also new ones would be put at the southern end near the Lakebridge subdivision and the future parking at Carlisle. Individual picnic tables could have roof shelters built over them. Fire rings and grills would be added.

A large pavilion (rental basis) could be put just off the road where the current concrete pad is (27 feet by 30 feet). Funds permitting, an additional concrete pad of the same size may be added to the existing one to allow for a larger pavilion.

Lewisville Lake Study
Willow Grove Park

E. Ball Fields
There are two existing ball fields.

The future plans would be to add two more fields and joint use for soccer in the same area. The overflow parking at the west end (see B. above) could service this area.

F. Trail
There is an existing trail (dirt and grass) that goes from Hundley to Carlisle.

The future plans would be to have this trail paved (12 foot wide or so), which would require some culverts. Paving the trail would open up the access to seniors and those with disabilities. A trail connecting it to the oval road could be developed.

G. Boat Ramp
There is no existing boat ramp.

The future plans would be to place a ramp to the north of the peninsula, closest to the marina. This could be a pay as you go ramp.

H. Swimming Area
There is no developed swimming area existing at this time. People do swim there now.

The future plans would be to improve the area south of the peninsula for swimming. Gravel and sand would be added for improvement. Boundary ropes would also be installed and fishing in the swimming area would be prohibited.

I. Concessions
There are no concessions at this time.

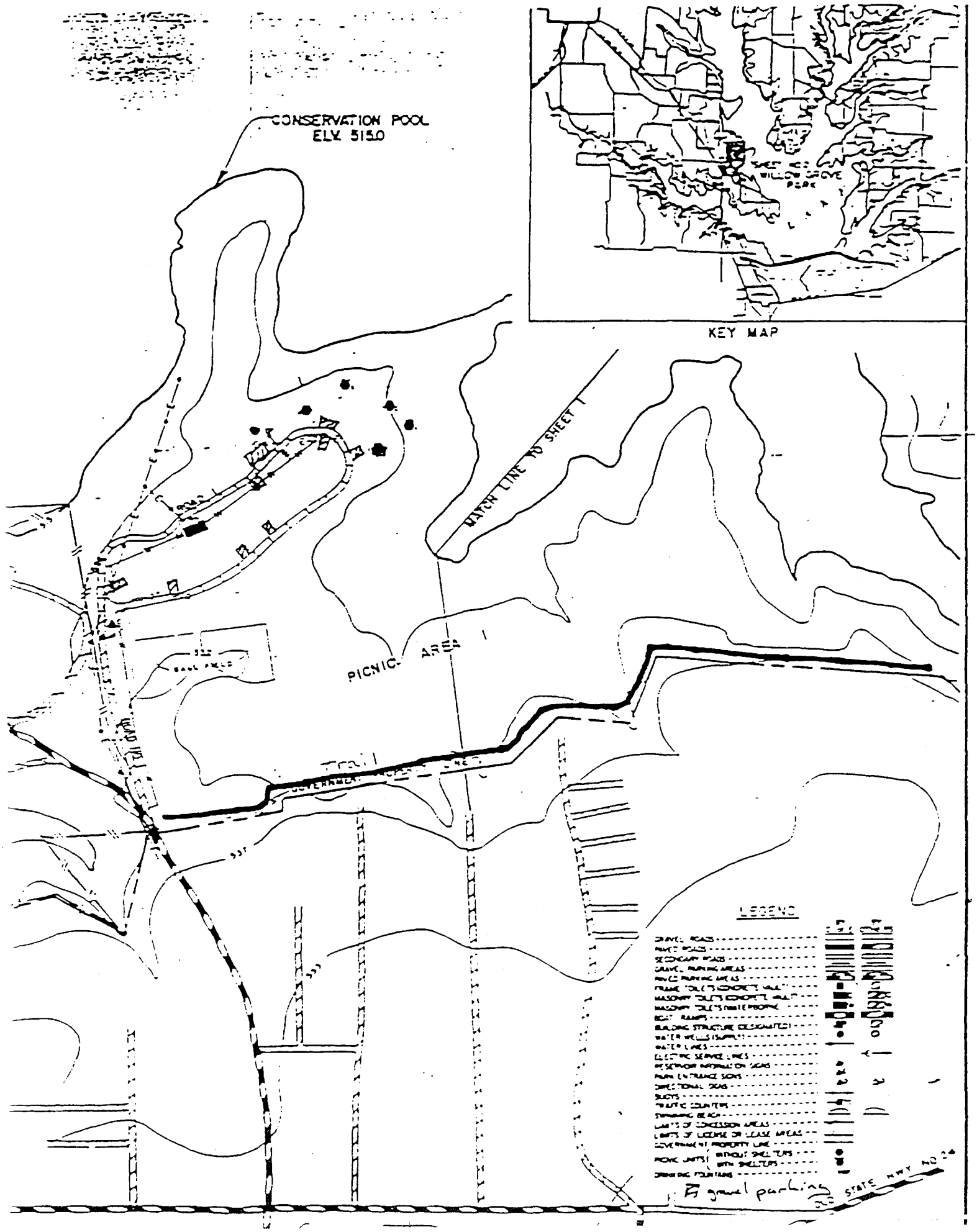
The City of Lake Dallas Parks and Recreation Board would like to be able to have canoes, paddleboats, rowboats, and other non-motorized craft for rent. The shallow water in the coves makes this an ideal area for small craft that have difficulty in the main part of the lake from wind and large boats. It is the City's understanding that a permanent concession stand is not allowed. If it were it would have to be placed at he park entrance above the 532 elevation. That being the case, the City requests a portable/temporary building to be placed in the parking at the south end of the oval. In addition to watercraft rentals other items for sale could be small foodstuffs, water, sodas, sunscreen. There are several gas stations, grocery stores, etc within ten miles that offer food and drink, and most people will come prepared and not need to purchase any. Being that the location is somewhat remote, having the convenience of a small amount of necessary supplies is a good idea. There are no non-motorized small craft rentals nearby. The parking for this area would be served by the trailer/overflow parking described above.

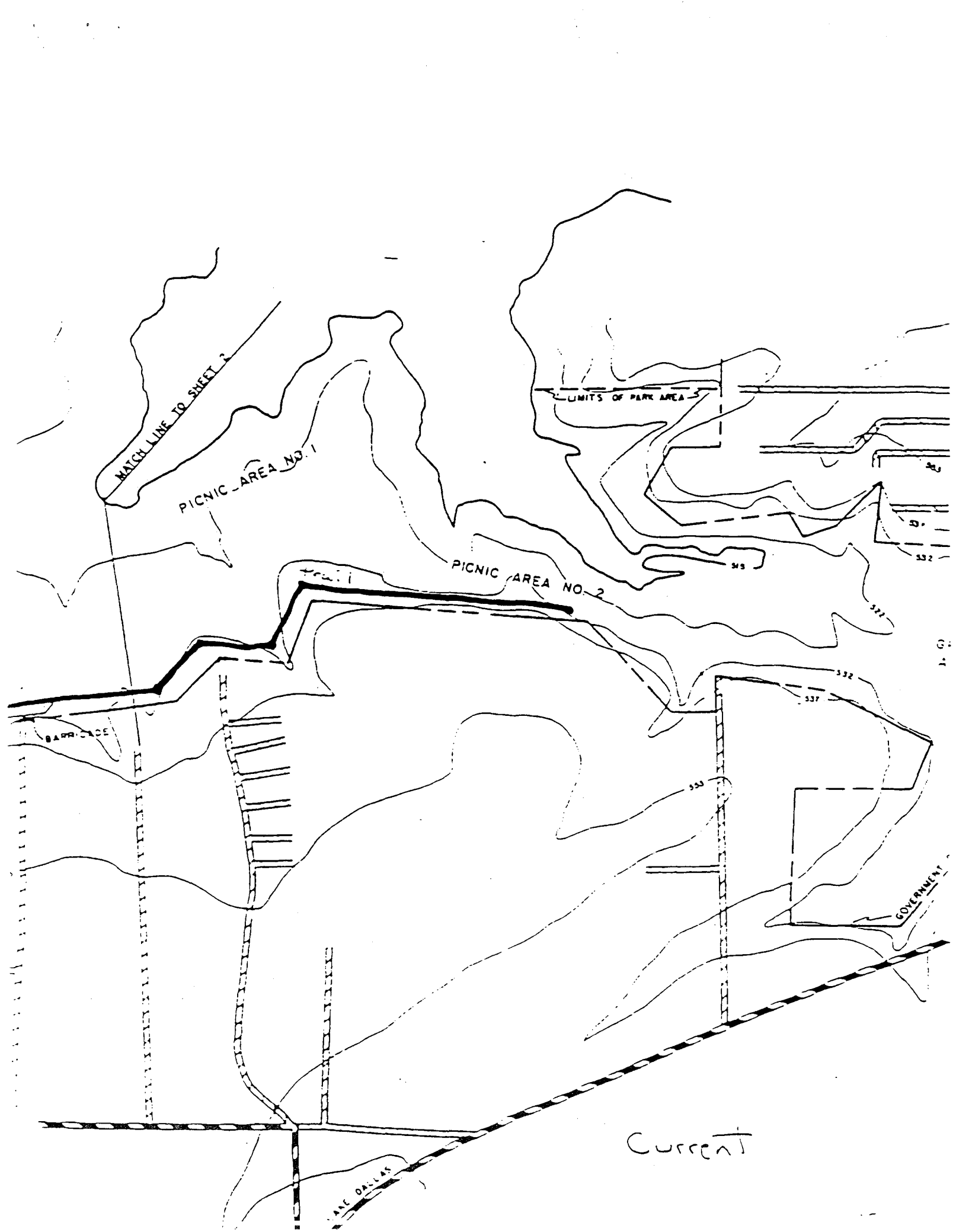
Lewisville Lake Study
Willow Grove Park

J. Restrooms:
There is currently one vaulted bathroom that is closed down and is to be scheduled for demolition. One porta-potty serves the park at this time.

Use is expected to climb and much of the use will be from outside the City. Restrooms are important and porta-potties are not good for the long term. Vaulted bathrooms at each end of the oval would be minimal, since a sewer system requires the 532 elevation. One restroom would be placed with the parking at the south end of the oval; the other restroom would be at the north end of the oval. This provides for more user parking, does not take up "Beach area" and has good access.

K. Other amenities:
A playground can be placed north of the parking at the south end of the oval. Water fountains could be placed near the restrooms and playground area and near the concession stand. Currently there is one unusable water fountain closer to the lake than the proposed fountains. Current water pipes may be usable.


CONSERVATION POOL
ELV. 515.0
KEY MAP
WATER LINE TO SHEET 1
PICNIC AREA
TRAIL
LEGEND
STATE HWY NO 24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PICNIC AREA NO. 1
LIMITS OF PARK AREA
PICNIC AREA NO. 2
Trail
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GOVERNMENT
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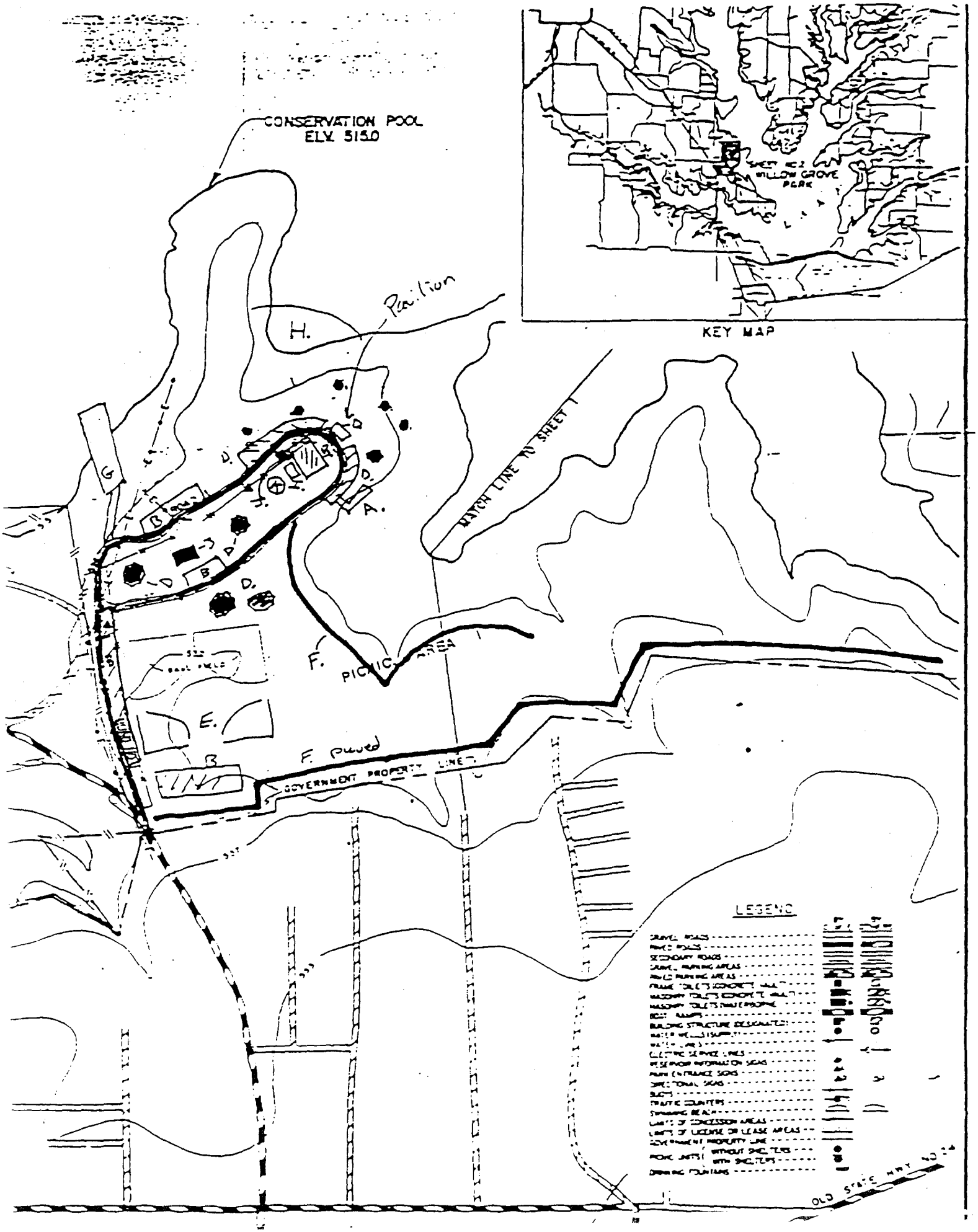
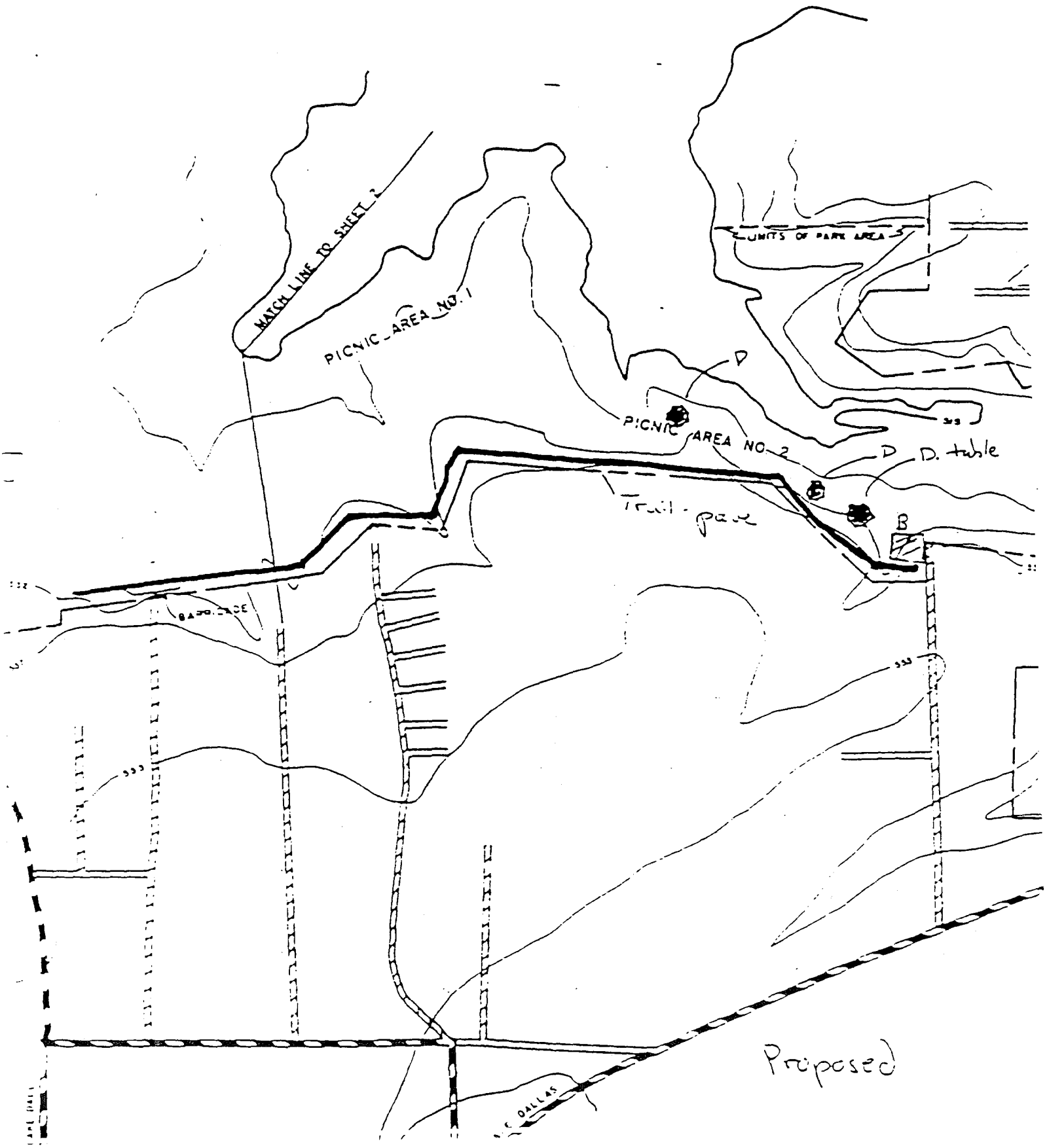

CONSERVATION POOL
ELV. 5150
KEY MAP
SHEET NO 2
WILLOW GROVE
PARK
Pavilion
H.
G
A.
B
D.
MATCH LINE TO SHEET
F.
PICNIC AREA
E.
F. Paved
GOVERNMENT PROPERTY LINE
LEGEND
OLD STATE HWY NO 24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APPENDIX D

HIDDEN COVE PARK AND WYNNEWOOD PARK – THE COLONY

THE COLONY
TEXAS
CITY BY THE LAKE

PARKS AND RECREATION
5151 North Colony Boulevard
The Colony, Texas 75056-1219
(972) 625-1106

November 1, 1999

Mr. Doug Cox, Reservoir Manager
Lake Lewisville, USACE
1801 N. Mill
Lewisville, TX 75057

Dear Doug,

On October 29, 1999, representatives from the City of The Colony and the Town of Little Elm, along with their prospective marina developers, met to negotiate modifications to their development plans to meet the carrying capacity limitations established by the USACE for Lake Lewisville. As a result of this meeting, the City of The Colony submits the following changes to the development plans for Hidden Cove, Wynnewood Park, Eastvale, and Stewart Creek Park.

Hidden Cove Park – Our original plan showed a 250 slip marina, and a 3 lane public boat ramp with 75 parking spaces. We are modifying this request to include a 350 slip marina with a 1 lane boat ramp and approximately 25 parking spaces to service the marina. (attachment A)

Wynnewood Park – We initially projected a 1300 slip marina with associated amenities at this location. Our request has been modified to 840 slips, with all the same features originally proposed. The option for a marina in the cove in Zone A has been removed. (attachment B)

Eastvale Park – We are removing our request for an additional boat ramp and related parking spaces at this location. Boat rentals may be requested with the understanding that they must be in a contained area within that cove. (attachment C)

Stewart Creek Park - We are reducing our initial request from 100 additional parking spaces to 10-15 spaces with an additional ramp. This is the amount allowed as stated in the PEA without impacting the carrying capacity for Zone A.

We believe that these reductions, along with modifications that Little Elm agreed upon, will not exceed the additional carrying capacity of 0 for Zone A, and 228 for Zone C, as set forth by USACE.

Any questions regarding these changes may be directed to me at (972)625-1106 x 558. We appreciate your time and consideration.

Sincerely,

Pam Nelson

Pam Nelson, Director
The Colony Parks & Recreation Dept.

LAKE LEWISVILLE
DEVELOPMENT PLANS

Enclosed are development plan modifications and letters of commitment from each entity on the lake that had submitted requests for water related recreation use projects. Listed below are submittals contained in this package.

Zone A

Pier 121 Marina – Marina's Intl. - Gilbert Welch

Eagle Point Marina – City of Lewisville - Fred Herring/J. Russell Trett

Stewart Creek Park - City of The Colony – Pam Nelson

Wynnewood Park – City of The Colony – Pam Nelson/Tim House

Eastvale Park – City of The Colony – Pam Nelson

Hickory Creek Park – Town of Copper Canyon – NO RESPONSE
(We have made numerous attempts to contact Copper Canyon, and left messages on the town's answering machine, and have received no response.)

ZONE B

Dallas Corinthian Yacht Club – Jay T. Colburn

Lakeview Marina – L.M. Drozd

Willow Grove Park – City of Lake Dallas – Stewart Fairburn

ZONE C

Wynnewood Park – City of The Colony – Pam Nelson/Tim House

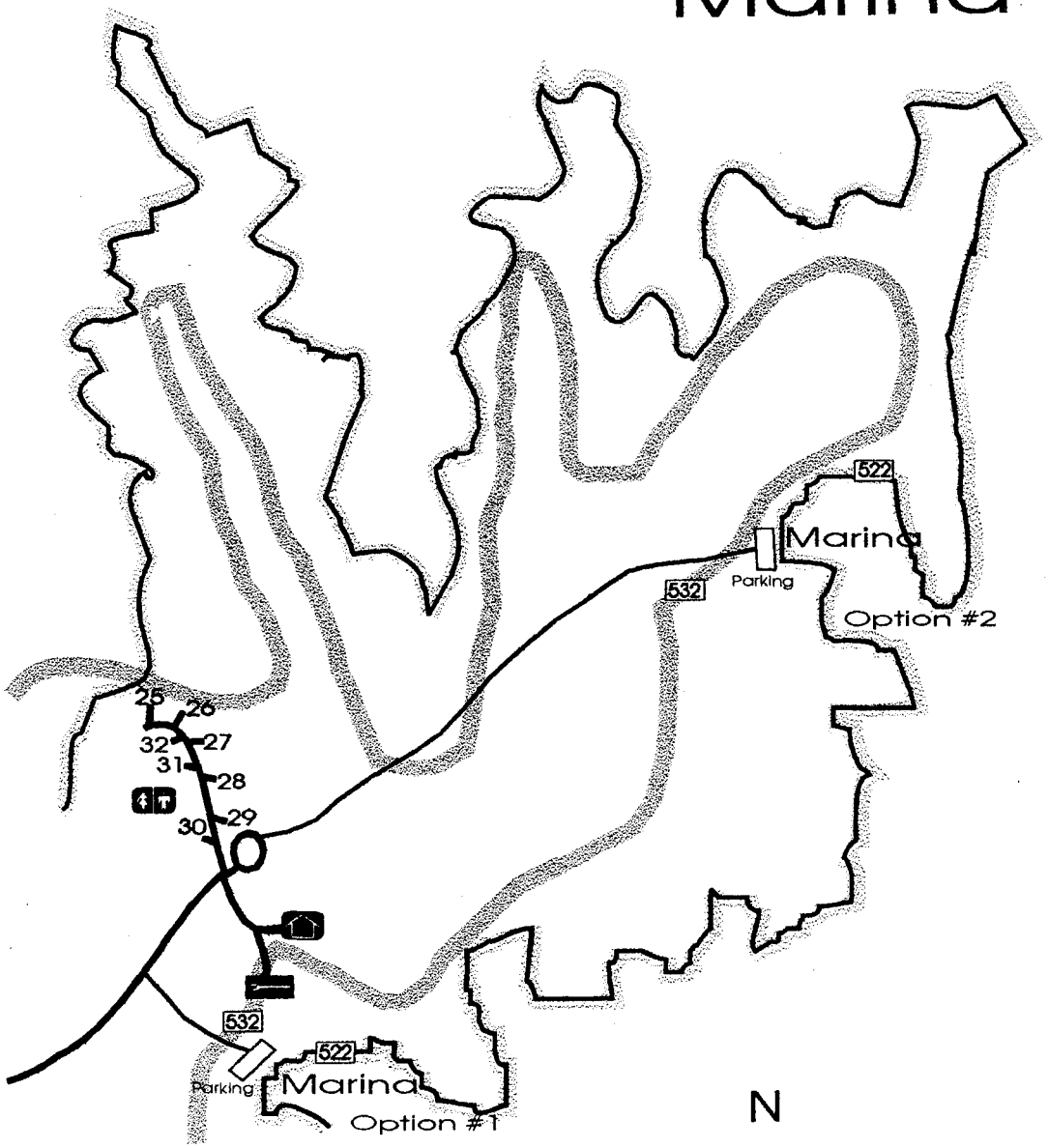
Cottonwood Park – Town of Little Elm – Jim Pelley/Ben Miller

Hidden Cove Park – City of The Colony – Pam Nelson

Attachment A

Revised December 1999

Marina 4



1. Option #1 - North of maintenance area. Elevation 522
   Option #2 - West and South of R.V. site #29. Elevation 522

2. Option #1 - 20' x 800' asphalt road to a 25 vehicle asphalt parking area for marina
   Option #2 - 20' x 2600' asphalt road to a 25 vehicle asphalt parking area for marina

3. Marina - Laminated Wood System features (350 slips, single & double loaded slips, 16' x 900' custom floating brakewater, aluminum gangways, customized utility chaseway, decked cornerwalks, continuous vinyl fendering, pile guides with polyurethane rollers and steel piling anchorage system.

4. Store/Cafe 7700 sq. ft. ; 5000 sq. ft. repair shop and 17,800 sq. ft. dry storage

5. Courtesy Dock with galvanized steel frame with material designed to perform well under any condition, polyethylene floatation, telescope anchorage and all dock structures, bridges and accessories to be hot-dip galvanized after fabrication.

6. Service Ramp one lane. (20' x 150')

7. Projected construction date: 2002 - 2003

Attachment B

WYNNWOOD PENINSULA MARINA

LOCATION:

The original submission for Wynnwood Peninsula designated two alternative locations; one in a cove off the south end of the peninsula, and the other off the western shore at the north end of Wynnwood Park. (See "Location Map" following.) The southern location has been discouraged by the initial "Lake Lewisville Use Study", thus the current proposal focuses on providing more detail for the west shore site. In addition, this proposal has also been amended to reduce the number of slips requested from 1300 to 840 wet slips, which brings it into compliance with the formula determined to make the total "Zone C" proposals consistent with the number of slips allowed by the "Lake Lewisville Use Study" preliminary findings.

BREAKWATER:

The proposed site will require a fixed breakwater which will be constructed of rip rap. The total length of the breakwater is estimated to be 2500 LF. It will be built to a 537' height and is intended to have a top width of approximately 20 feet and side slopes of 1:1 slope. Assuming the normal pool elevation of 522', this breakwater will occupy about 2.85 acres of water surface area.

EXCAVATION AND CLEARING:

The proposed marina will consist of two basic areas; (1) the existing lake area to be protected by the breakwater, and (2) a connected inland lake to be excavated. This inland lake is estimated to be about 5.1 acres, therefore compensating for the water area displaced by the breakwater by a factor of nearly 2:1. Excavation of the inland lake will be to a level of 499 msl. The average depth of excavation required is estimated to be 40', therefore resulting in the excavation of about 330,000 CY to create this lake.

Dredging along the 1400' shoreline is expected to be limited to an average distance of 35' from shore and an average depth of 10'. This should result in a total dredging of about 20,000 CY along the shore. Except for this area to be dredged, the rest of the marina area within the breakwater already has a minimum depth of 499 msl, with average depths to about 485 msl. (These depth findings were conducted December 5, 1999.)

Virtually no clearing of the inland area will be required, as this area is basically a treeless field. There are some underwater trees in the shoreline area which will be cleared at the time of dredging in this area.

The site is relatively flat and contains no creeks or major drainageways. Sedimentation is expected to be minimal.

GENERAL DEVELOPMENT DESCRIPTION:

The proposed site is part of the 600+ acres known as Wynnwood Park which is being leased by the Corps to the City of The Colony, then sublet to a development entity headed by Matthews

Southwest, a local developer who also owns over 600 acres adjacent to Wynnwood Park. The development of the marina will be through a joint venture consisting of Matthews Southwest and East Texas Marina Enterprises, Inc.

The existing land area involved with the marina and related facilities is about 10 acres, 5 of which will be excavated to provide additional water area. The remaining 5 acres will primarily provide parking, but also includes a dry storage area, beach, boat ramp, and helipad.

The ultimate number of wet slips will be 840, to be developed in phases. Phase 1 is expected to be about 400 slips, which will include all of the inland area to be excavated. The estimated breakdown of the slips is as follows:

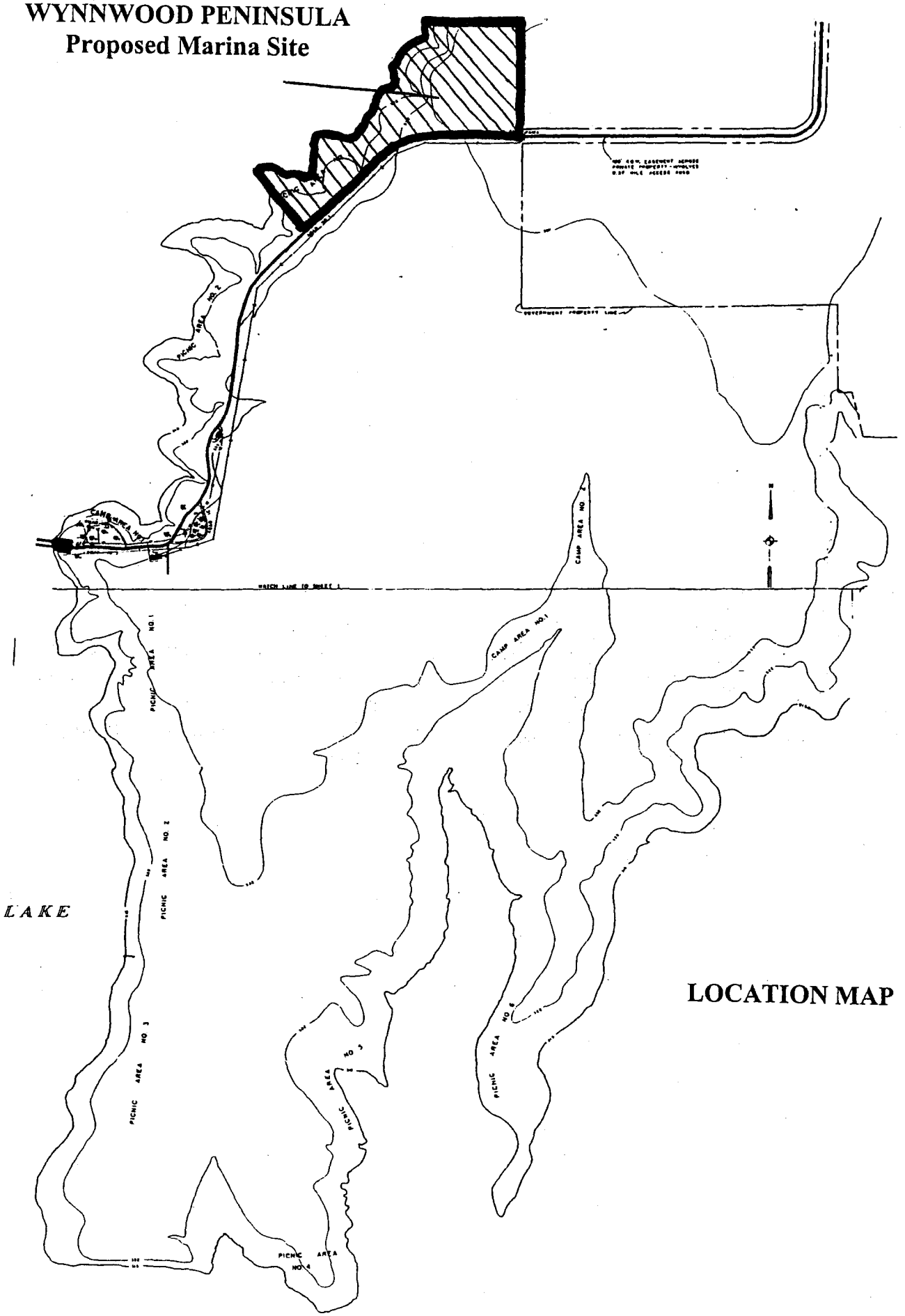
24' uncovered	30
36' uncovered	20
24' covered	256
36' covered	260
48' covered	140
60' covered	74
84' covered	60
Total	840

The other principal components of the marina development will be a shipstore and restaurant, each of which will be floating structures. The shipstore will provide groceries, bait, fishing/boating equipment, and fuel. It is estimated to be about 2000 s.f. in size. The restaurant will be a two-story structure, with approximately 10,000 s.f. enclosed and an additional 8,000 s.f. in covered deck area.

SCHEDULE:

The Phase 1 development will include all of the core facilities, but only 400 slips. Phase 1 will begin construction as soon as approvals are in hand, and opening is projected for the spring of 2001. The balance of the slips will be constructed between 2002 and 2008.

WYNNWOOD PENINSULA
Proposed Marina Site



LOCATION MAP

LAKE LEWISVILLE
WYNNWOOD PENINSULA
PROPOSED MARINA

24' UNC	30
36' UNC	20
24' COV	258
36' COV	260
48' COV	140
60' COV	74
84' COV	60
TOTAL	840

EE 12/15/99 LAKELEWISVILLE2

APPENDIX E

COTTONWOOD PARK – LITTLE ELM

Town of Little Elm

P.O. Box 129
Little Elm, Texas 75068

(972) 294-1821

December 14, 1999

Mr. Doug Cox
U.S. Army Corps of Engineers
CESW-OD-LE
1801 N. Mill Street
Lewisville, Texas 75057-1821

RE: Cottonwood Park 10 Year Development Plan

Dear Mr. Cox,

We are submitting for your approval a revised development plan we hope will comply with the Corp of Engineers Zone Carrying Capacity. These revisions address only the activities removed from the PEA; i.e., Water Related Recreation Use Facilities.

If there are any questions or comments please contact me at (972) 294-1821, or Mr. Ben Miller at (972) 442-3567.

Thank You in advance for your time and consideration.

Sincerely,

Jim Pelley
Mayor

ATLANTIC MEECO
The Marine Company

December 15, 1999

Facsimile 972-442-6472 and Mail

Mr. Ben Miller
Collin Park Marina
P.O. Box 1177
Wylie, TX 75098

Re: Cottonwood Creek Marina

Dear Mr. Miller:

The floating dock system is designed to accommodate the lake elevation variances of Lake Lewisville.

Elevations 522 to 505
- Bridge access point is 522-524.
- Marina is located at 500+/- and will function properly at elevations from 522+ to as low as 505.

Elevations greater than 522
- All bridges will float and be accessible and safe to use.
- Temporary access to the first bridge will be provided as required.

Elevations 504 and less
- Bridge access is designed to be disconnected at the bridge closest to the dock.
- Temporary bridges/access will be provided to link between the separation points as required.
- Docks can be readily moved out past the 495 elevations.
- Utilities – electrical, water, sewage, and fuel lines will be designed to that they will be readily/safely extended to accommodate the relocation of the docks to deeper water. All utilities will be fully functional and in accordance to codes at all water levels.

Respectfully submitted,

Martin K. McDonald

Martin K. McDonald
Sales Manager

MKM/cf Cottonwood Crk 12.15.99

Floating structures will include rental slips, a ships' store w/offices, a repair and maintenance facility, showers and restrooms, a restaurant, courtesy docks, a fuel dock, a boat rental, a yacht sales dock, storage facilities, holding tank pump out facility, and a floating breakwater.

1. Rental Slips- Ultimately the facility and its location will support 840 slips. The first phase of development will include 251 open and covered slips from 20' - 50' in length. Market demand will dictate time, types, and sizes of future additions. The majority of these slips will be used for long term boat storage. Original construction will include 156 slips. As these slips near 85% occupancy , the remaining 95 slips will be constructed to complete Phase 1. There are two reasons for this approach. First, time is critical, the smaller the project the sooner it will be open for business. Secondly, an extended permitting process will delay opening until late in the season, at best. We probably could not lease so many slips and prefer not to bear the cost of construction capital for unoccupied slips.
2. Ships' Store/Offices/Fuel Dock/Pump Out Facility/Restrooms- These will all be located on a single floating platform with service slips for fueling and pump outs. This platform will serve as the retail business center of the marina, as well as housing the offices for day to day operations, bookkeeping, accounting, etc. The business of leasing slips will also take place in these offices. The store will sell boating accessories, fuel, and groceries to the public. Showers, restrooms, and holding tank pump out system also will be located on ships store platform. These facilities are to be constructed during year one of development.
3. Repair and Maintenance Facility- A 50,000# capacity Hydrohoist service platform will be constructed next to the Ships' Store platform. The purpose of the hoist will be to provide service and maintenance for boats moored at Lake Lewisville. It is to be constructed during year one of development. The hoist will include a reclamation system to collect and process pollutants generated by repair work. All sanding will be dust-free. Ben Miller currently operates this very system at another Corps lease marina. It is approved by USACE ERGO Department and the TNRCC. The Hydrohoist Company will supply and construct the service hoist. They have constructed several throughout the U.S. that currently operate in compliance with EPA regulations. The submergible platform will be surrounded by a three sided dock that will support a storage building and small workshop.

All of the above facilities are to be constructed During Phase 1 of development, and will be maintained and operated by the 2nd party leasee.

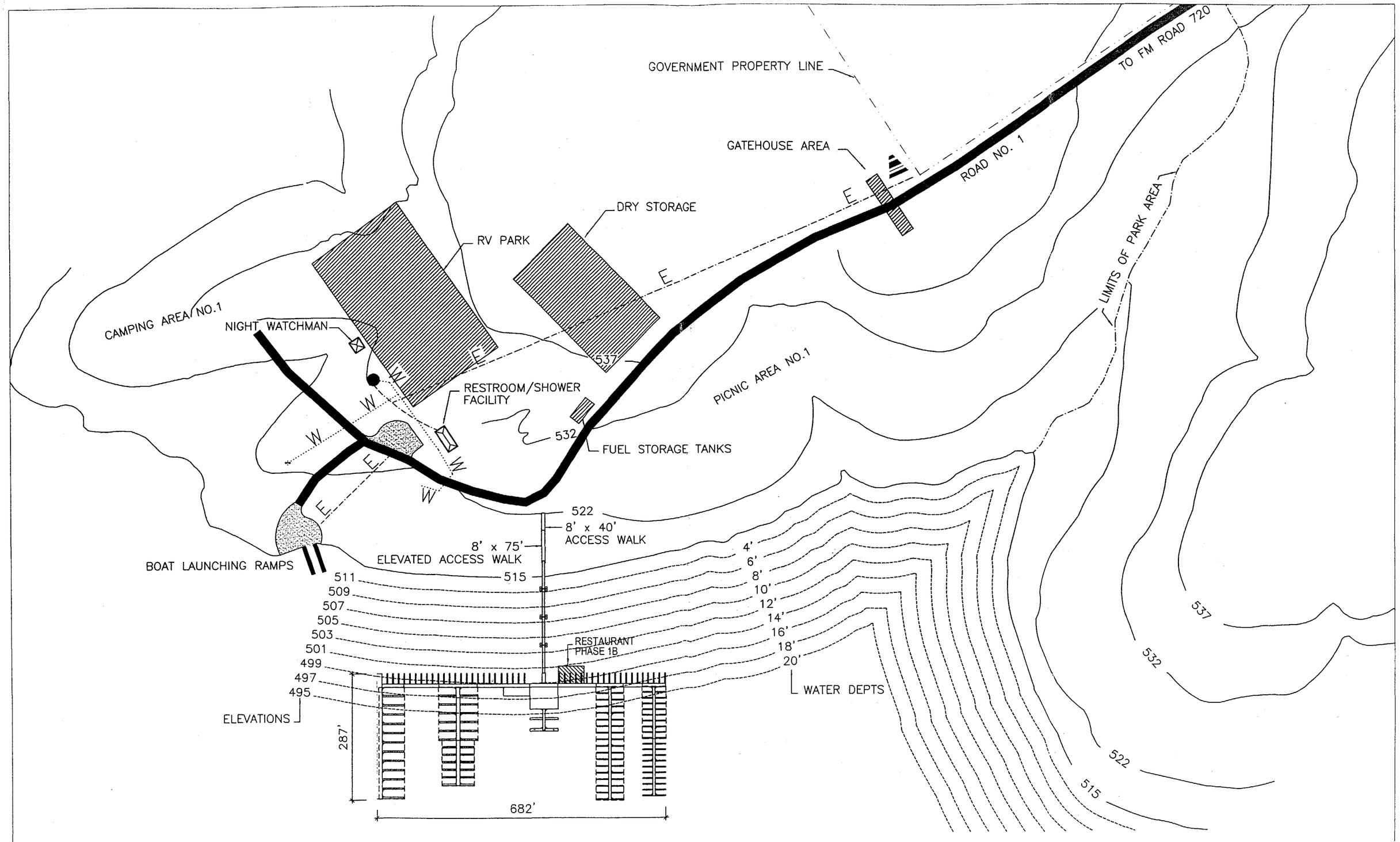
Facilities expected to be operated by 3rd party lessees:

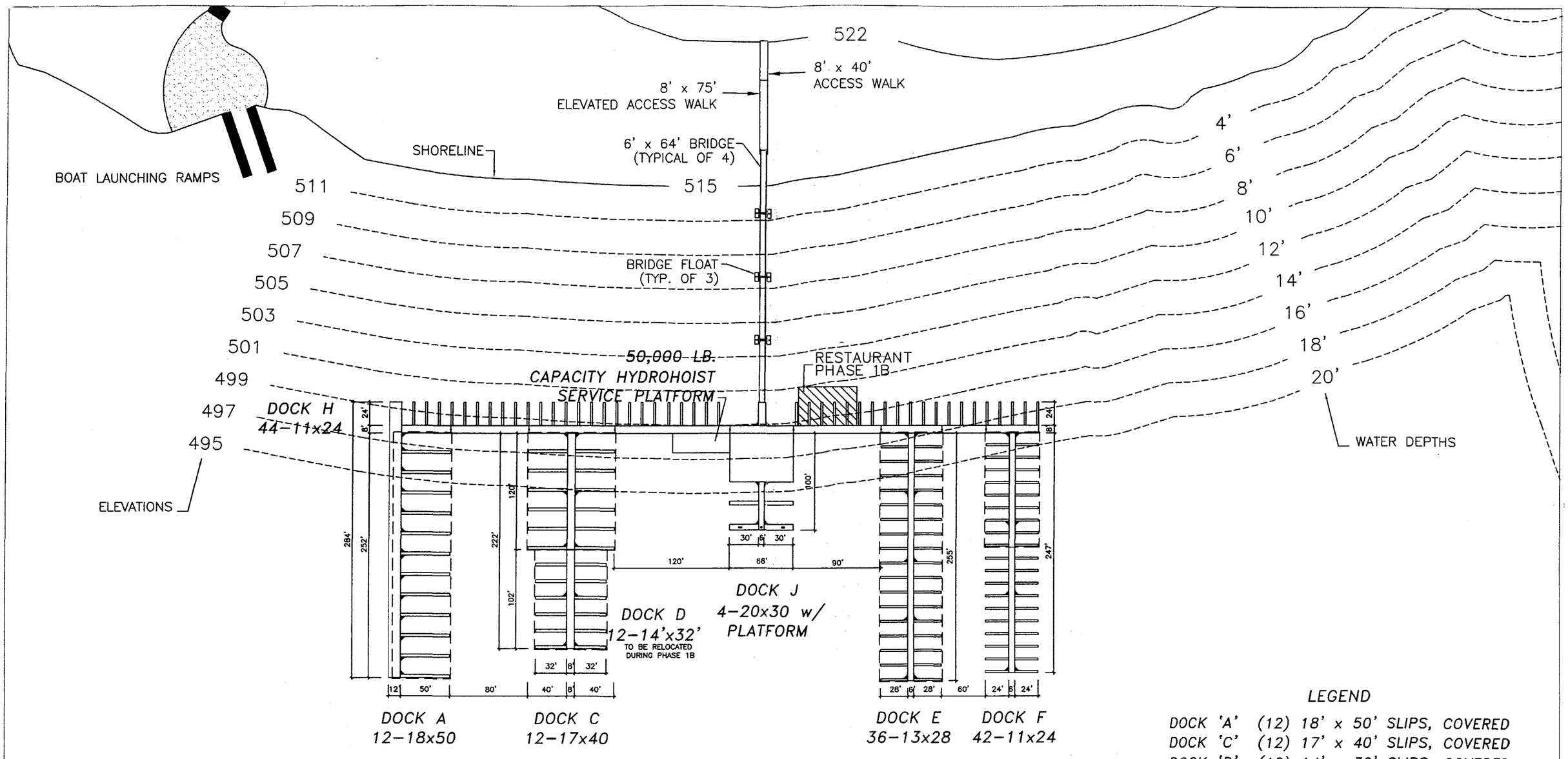
4. Restaurant w/Courtesy slips. It is expected that in the third or fourth year of operation the facility will have developed to the degree that it will support a restaurant/club facility. The menu will include domestic items such as hamburgers, sandwiches, steaks, seafood and typical side orders. The restaurant will include a bar serving soft drinks, beer, wine, and hard liquor. The restaurant will have its own restrooms, it will be located on its own separate platform that will include courtesy slips to accommodate the boating public and will conform to all applicable regulations and restrictions.
5. Boat Rental- It is also expected that during the third or fourth year of operation it will be appropriate to develop a boat rental. The boat rental might be managed by the marina staff and operated out of existing slips in the marina complex. If leased and managed by a 3rd party it is likely to require a separate dock with separate access. The 3rd party lease will then be responsible for construction, maintenance, and operation of the facility.
6. Yacht Sales Dock- The yacht sales dock will be operated by the marina or a 3rd party lease operation. The purpose of this facility will be to moor, display, and demonstrate boats for sale

that are too large to be trailered efficiently. Initially, and probably permanently, *the yacht* dock will be located within the existing marina facility, and probably will begin operation in year one to three of marina development.

All of the above mentioned floating structures will be constructed of galvanized steel frames supported by polystyrene flotation, and decked with treated #1 Southern Yellow Pine. All floating structures will be anchored by telescoping anchors or winch and cable anchorage systems.

7. Floating Breakwater- After construction of Phase One it may become apparent that a floating breakwater is necessary to protect the marina from wind and/or boat generated waves. A breakwater may also serve to establish a "No Wake Zone". To what extent, if any, and where a breakwater will need to be constructed can only be determined by experience. It may become necessary to surround the entire marina or none of it. Economically speaking, floating tire breakwaters are the most practical. We will utilize large discarded off-road vehicle tires stuffed with styrofoam cylinders. The tires will be connected and anchored with galvanized cables and clamps. The marina staff and general contractors will maintain the breakwater.
8. Earth and Rock Breakwater- In the unlikely event that a floating breakwater does not provide adequate wave protection for the floating structures, it may become necessary to build a solid earth and rock breakwater. Some of the earth used to build the barrier will be excavated by drag line from below the lake surface immediately adjacent to the structure itself. This approach will also provide an added area for floating boat storage. Most of the earth and rock will be hauled in by truck from other construction sites not located on Corps property. The peak of the breakwater will be at about 532.0 m.s.l. and be 750' long. Construction will begin after a required permitting has been issued by the Corps of Engineers.
9. Stump Removal- Several unsightly stumps are located at 515 m.s.l. along the shoreline of Cottonwood Park. After Corps approval has been granted, and the lake level drops to 515 m.s.l. the stumps should be cut to ground level or pulled with heavy machinery.


GOVERNMENT PROPERTY LINE
TO FM ROAD 720
GATEHOUSE AREA
ROAD NO. 1
DRY STORAGE
RV PARK
LIMITS OF PARK AREA
CAMPING AREA NO.1
NIGHT WATCHMAN
RESTROOM/SHOWER FACILITY
PICNIC AREA NO.1
537
532
FUEL STORAGE TANKS
522
8' x 40' ACCESS WALK
8' x 75' ELEVATED ACCESS WALK
BOAT LAUNCHING RAMPS
515
511
509
507
505
503
501
499
497
495
ELEVATIONS
RESTAURANT PHASE 1B
4'
6'
8'
10'
12'
14'
16'
18'
20'
WATER DEPTS
287'
682'



CONTOURS & WATER DEPTHS

LEGEND

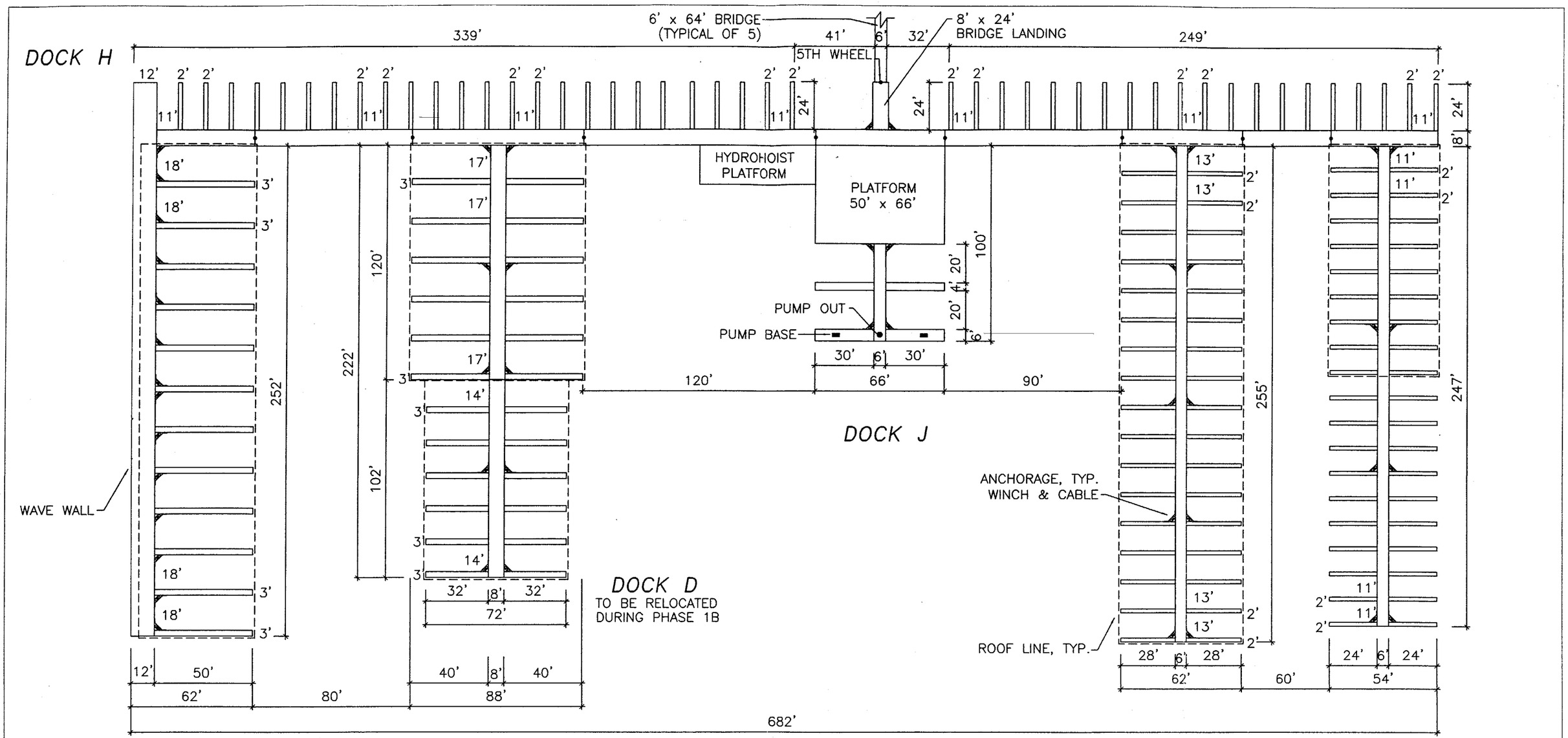
DOCK 'A'	(12)	18' x 50' SLIPS, COVERED
DOCK 'C'	(12)	17' x 40' SLIPS, COVERED
DOCK 'D'	(12)	14' x 32' SLIPS, COVERED
DOCK 'E'	(34)	13' x 28' SLIPS, COVERED
DOCK 'F'	(18)	11' x 24' SLIPS, COVERED
	(20)	11' x 24' SLIPS, OPEN
DOCK 'H'	(44)	11' x 24' SLIPS, ~~OPEN~~ Covered
DOCK 'J'	(4)	20' x 30' SLIPS, FUEL w/ 50' x 60' PLATFORM
TOTAL	(156)	SLIPS

NO.	REVISION DESCRIPTION	BY	DATE

ATLANTIC MEECO
The Marina Company
1501 E. GENE STIPE BLVD
Phone: (918) 423-6833

DRAWN BY: P.G.S.	FILE NAME: 5711C-2	
CHECKED BY: ADAMS	JOB #	PLAN # 5711C
SCALE: 1"= 100'-0"	DATE: 12-01-00	SHEET 2 OF 6

COTTONWOOD CREEK MARINA
LAKE LEWISVILLE-LITTLE ELM, TX



LEGEND

DOCK 'A'	(12)	18' x 50' SLIPS, COVERED
DOCK 'C'	(12)	17' x 40' SLIPS, COVERED
DOCK 'D'	(12)	14' x 32' SLIPS, COVERED
DOCK 'E'	(34)	13' x 28' SLIPS, COVERED
DOCK 'F'	(18)	11' x 24' SLIPS, COVERED
	(20)	11' x 24' SLIPS, OPEN
DOCK 'H'	(44)	11' x 24' SLIPS, ~~OPEN~~ COVERED
DOCK 'J'	(4)	20' x 30' SLIPS, FUEL w/ 50' x 60' PLATFORM
	(156)	TOTAL SLIPS

4 Jan 99 DLC BM.

PLAN VIEW

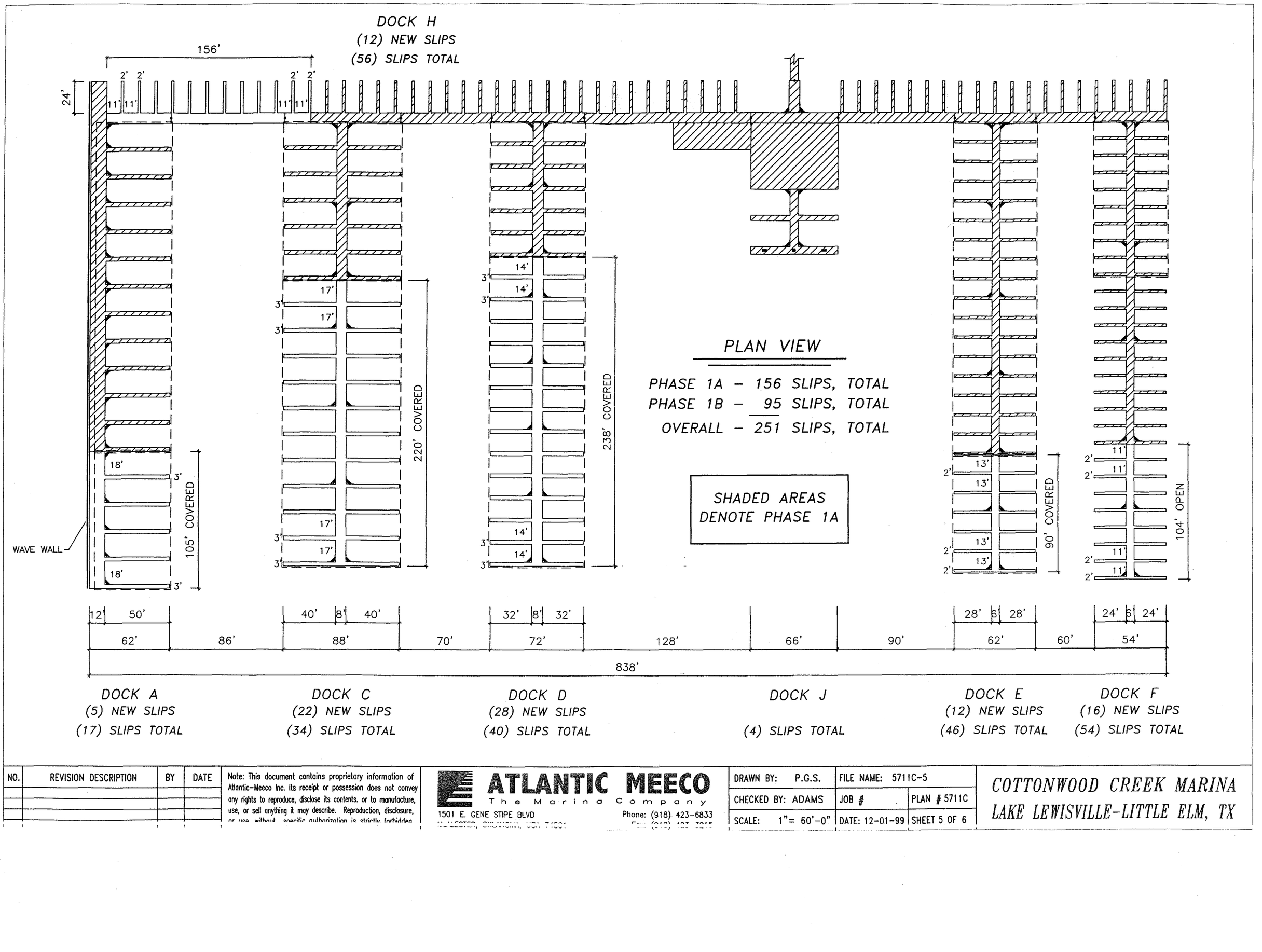
PHASE 1A

NO.	REVISION DESCRIPTION	BY	DATE

ATLANTIC MEECO
The Marina Company

DRAWN BY: P.G.S.	FILE NAME: 5711C-3	
CHECKED BY: ADAMS	JOB #	PLAN # 5711C

COTTONWOOD CREEK MARINA
LAKE LEWISVILLE, LITTLE ELM, TX



NO.	REVISION DESCRIPTION	BY	DATE

ATLANTIC MEECO
The Marina Company
1501 E. GENE STIPE BLVD
Phone: (918) 423-6833

DRAWN BY: P.G.S.	FILE NAME: 5711C-5	
CHECKED BY: ADAMS	JOB #	PLAN # 5711C
SCALE: 1"= 60'-0"	DATE: 12-01-99	SHEET 5 OF 6

COTTONWOOD CREEK MARINA
LAKE LEWISVILLE-LITTLE ELM, TX

APPENDIX F

COMMENTS AND RESPONSES

SUMMARY OF COMMENTS RECEIVED

The following is a summary of the issues identified in comment letters received during the public comment period of the Lewisville Lake water-related recreation use development environmental assessment:

OPPOSITION

Eleven letters and/or packets, representing a total of 34 individuals, two municipalities, and one environmental group, were received expressing opposition to proposed water-related recreation use development. These letters and/or packets came from the cities of Denton and Dallas, the Sierra Club, an attorney representing 34 residents living in or adjacent to Fiddler's Green (a housing area located across the cove from Cottonwood Park, site of a proposed marina), an attorney representing himself and 5 members of his family who live in Fiddler's Green (all six were also listed as represented parties in the packet received from the Fiddler's Green attorney), and six individual letters from Fiddler's Green residents, all of whom were also named as represented parties by the lawyer representing Fiddler's Green.

Municipality comments -

Dallas - Dallas Water Utilities requested the Corps to allow time for a contracted study being paid for by the city to be completed on Methyl Tertiary Butyl Ether (MTBE) levels in Lewisville Lake and results presented to City Council prior to making any decision to add more vessels to lake.

Denton - The City of Denton expressed several concerns about the Environmental Assessment and the underlying Programmatic Environmental Assessment (PEA) and Lewisville Lake Water-Related Use Study (WRRUS) and contends that the Corps needs to conduct an Environmental Impact Statement (EIS) prior to authorizing any additional water-related recreation development in order to fulfill the Corps legal obligations under the National Environmental Policy Act (NEPA). The reasons identified by the City for this conclusion include the arbitrary use of zones and marina slip to boat ratios in the WRRUS and PEA that were used in establishing the carrying capacity for the lake, the lack of air quality and water quality considerations, especially as it concerns MTBE issues, and the import given by the Corps in the EA to recreational considerations to the detriment of water supply, one of the lake's primary purposes.

Environmental group comments -

Sierra Club - The Sierra Club requested that the Corps conduct an EIS in order to adequately address the water quality, water quantity, flood control, loss of fish and wildlife habitat,

safety, financial impact on existing marinas, and/or navigational problems that would result with increase in number of vessels on lake.

Individual comments -

Individuals expressed concern about several issues. Comments included: 1) EA ignores MTBE and health issues; 2) EA ignores incremental impact of MTBE in concentrated geographic area - Cottonwood Park (CWP) and Hidden Cove Park marinas; 3) EA doesn't recognize loss of open water recreation and natural resources in Cottonwood Cove as an adverse impact; 4) EA fails to adequately analyze noise impacts of CWP marina; 5) EA fails to consider WRRUS recommendations regarding noise impacts at CWP site; 6) EA fails to consider adverse economic impacts to owners of property in Fiddler's Green; 7) EA fails to address ground water quality concerns; 8) EA fails to identify or address navigation impediments in Cottonwood Cove as result of marina; 9) proposed plans would result in inappropriate land use in Fiddler's Green area based on 1985 Master Plan; 10) EA doesn't properly address water depth limitation at the CWP site; 11) EA disregards the Corps own Developmental Policy guidelines regarding low lake levels and minimum design depths at CWP site; 12) EA doesn't discuss impact additional vessels will have on lake safety; 13) water supply is primary mission, not recreation; 14) EA ignores market demand and economic need results from previous studies; 15) PEA and EA provides an arbitrary analysis of carrying capacity because of zones; 16) Corps didn't do additional studies as recommended in WRRUS; 17) EA disregards low lake level impacts; 18) PEA and EA uses arbitrary slip/boat ratio - 5:1, 8:1, 10:1; 19) EA evaluates incorrect sites in Hidden Cove Park; 20) EA uses arbitrary boat capacity formulas to evaluate marina sites, especially CWP site; 21) EA makes arbitrary conclusions regarding economic demand for recreation opportunities; 22) EA makes arbitrary conclusions concerning aesthetic impacts; 23) EA arbitrarily concludes that there would be no adverse impacts to recreation; 24) questions the numbers of parking spaces in Zone C that were used in WRRUS to analyze carrying capacity; 25) states that since wet slips "often" have more than one vessel in each slip, then the numbers (number of vessels on the lake at peak times contributed by marina slips) used by the Corps to determine the carrying capacity at Lewisville Lake are incorrect; 26) questions whether the FONSI executed on September 30, 1999 as a result of the PEA covers any water-related recreation actions; 27) questions the basis and reliability of the carry capacity numbers (using "expert opinion"); 28) EA lacks discussion about water quality issues; and 29) claims PEA and EA do not adequately analyze environmental parameters (i.e. noise, aesthetics, water quality, etc.), therefore, are flawed and do not meet the NEPA responsibilities of Corps.

SUPPORT

Fifteen letters, representing a total of 17 individuals, two governmental agencies, and one municipality, were received expressing support for the water-related recreation use development at Lewisville Lake. These letters came from the U.S. Fish and Wildlife Service (USFWS) and the Texas Natural Resources Conservation Commission (TNRCC), the Town of

Little Elm, and 12 individual letters representing businessmen and homeowners in the Shell Beach subdivisions adjacent to the proposed Cottonwood Park marina site.

Agency comments –

USFWS – The U.S. Fish and Wildlife Service applauded the time, effort, and finances that went into the Water-Related Recreation Use Study (WRRUS) and Programmatic Environmental Assessment (PEA) in gathering, evaluating, and analyzing data to develop and set a carrying capacity for Lewisville Lake. Would like to see the Corps monitor the vessel usage at the lake in the future to determine whether the model conditions and assumptions made as part of the WRRUS and PEA were adequate to predict future conditions and to take what is learned and adapt the model for similar studies on other lakes.

TNRCC – Texas Natural Resource Conservation Commission recommended that actions be undertaken to prevent surface and groundwater contamination during and after construction.

Municipality comments –

Town of Little Elm – The Town Council of the Town of Little Elm provided a resolution supporting the proposed Cottonwood Park Marina. The resolution expresses the town's interest in the proposed marina development to further enhance the quality of life in the area and to serve the boating public in the northeast region of the lake.

Individual comments –

Individual comments of support stated some reasons why the individuals thought the proposed marina development was worthy of their support. These reasons included: 1) development of marina in Cottonwood Park would serve as economic enhancement to community of Little Elm; 2) development of proposed marinas would relieve the lack of marina facilities in northeast portion of lake; and 3) development of proposed marinas would enhance the recreation amenities in the northeast portion of the lake.

SUMMARY RESPONSE TO COMMENTS

A number of the comments received, individuals, attorneys, and a municipality, expressed concerns about information and/or data that were analyzed and included in the WRRUS and/or PEA. These comments include such things as ignoring previous market demand or economic need studies, the arbitrary analysis of carrying capacity because the lake was broken into zones, the arbitrary use of slip/boat ratio, not doing further studies as recommended in the WRRUS, the lack of discussion of impact of additional vessels on lake safety, the arbitrary use of boat capacity formulas, questioning numbers of parking spaces in Zone C that were used in WRRUS to analyze carrying capacity, concern that numbers used as basis for setting carrying capacity are incorrect because wet slips often have more than one vessel in each slip, questioning whether carrying capacity policy was included in FONSI executed as a result of PEA, questioning the basis and reliability of carrying capacity numbers, concluding that the Corps needs to perform an EIS in order to adequately discharge our responsibilities under NEPA because the PEA and tiered EA acknowledge that carrying capacity would be exceeded in certain zones during peak use hours on weekends and/or holidays during the summer boating season, and finally, the inadequacy of either the PEA and/or EA to analyze environmental parameters. The carrying capacity policy, which is the ultimate basis for most of the above comments, was developed based on sound judgment and appropriate analysis of data collected during the water-related use study, was included and further analyzed in the PEA, and was included in the FONSI executed on September 30, 1999. Further, by utilizing peak use numbers, which generally correspond to boating use during a two hour period on a Sunday afternoon in prime boating weather, instead of average use numbers, which would have averaged boating use numbers over both weekdays and weekends, the carrying capacity numbers allow for a large degree of flexibility to protect the lake's resources even during periods of high boating use.

Many of the letters received also expressed concern about water quality issues, specifically the increased levels of MTBE in the water at Lewisville Lake that would be generated by allowing either the expansion of existing or development of additional water-related recreation use facilities. A University of North Texas study at Lewisville Lake has documented that levels of MTBE are higher in locations near marinas and high use boat ramps following peak use weekends and holidays in the summer boating season. Absent of accidental spilling of petroleum into the lake, or water source flowing into the lake, the primary source of MTBE in surface water is its injection into a lake's water via the exhaust system of boats, it would only make sense that this is the case. The cove containing the City of Denton's water intake structure was identified as the location with the highest levels of MTBE levels during the UNT study in the summer of 1999, with the highest being reported as 16.7 ppb. The major boating activity in this cove, known as the "Party Cove", was by boaters idling their motors and rafting together to socialize. Since that time, buoy lines have been establish which limit boat traffic from coming within 200 feet of the water intake. Implementation of the buoy system and the low water elevation in Lewisville Lake virtually eliminated the use of the cove for rafting and the levels of MTBE in the surface water have dropped accordingly (ranging between not detectable to 3.85 ppb). Even with the high levels of MTBE noted in the surface

waters of the cove containing Denton's water intake structure during the summer of 1999, in the City of Denton's Water Utilities Department 2000 Water Quality Report (http://www.cityofdenton.com/utilities/waterquality2000.html), which includes all of the 1999 water quality data for drinking water, it is noted that "Monitoring data from a recent study by the University of North Texas indicate MtBE detections between 0.0 and 2.4 ppb, with an average of 1.2 ppb. Sampling was done only in the summer months when levels are typically at their highest due to recreational activity on the lakes.").

On October 23, 2000, Corps personnel met with representatives of the City of Dallas Water Utilities Department to discuss MTBE concerns at Lewisville Lake as identified in the City's comment letter. Dallas gets part of their water supply from Lewisville Lake, however their intake structure is located downstream of the Lewisville Dam along the Elm Fork of the Trinity River The Dallas representatives requested that the Corps withhold any decision on the pending EA until January 2000, when a report, documenting the MTBE levels at various water supply lakes, including Lewisville Lake, is scheduled to be completed. The Corps asked that Dallas provide the technical data already collected in order that the information be incorporated into the decision making process for this environmental assessment and to determine whether additional time was warranted. On December 9, 2000 the Corps received the requested data. In the interim, the Corps contacted the Upper Trinity Regional Water District and the City of Lewisville Water Utilities Department, entities which both have water intake structures located on the Lewisville Lake Dam to see whether either had detected the presence of MTBE in their raw water supply obtained from Lewisville Lake or in their finished drinking water. Results of all these analyses are as follows:

- The City of Dallas has collected monthly samples at 5 different sites on Lewisville Lake from October 1999 through October 2000. The levels of MTBE on Lewisville Lake vary according to the location of the sampling site with the highest level (8.64 ppb) being recorded in July 2000 at a site located in the Hickory Creek arm of the lake (near IH-35 Bridge). Levels of MTBE recorded near the lake's outlet varied from a non-detectable level (recorded for 10 of the 13 months sampled) to 1.2 ppb recorded in July 2000 (see Exhibit A to this Appendix).

- The Upper Trinity River Regional Water District indicated that they have been conducting regular monthly testing for MTBE in their raw water supply for several months. Results of the analyses indicate that since April (the first month for which they supplied copies of their analyses) the detection limits for MTBE have been below the threshold of detection, or less than 1.0 ppb (see Exhibit B to this Appendix).

- The City of Lewisville' Water Utilities Department indicated that they do not routinely test for the presence of MTBE in their raw or drinking water supply. Copies of periodic volatile organic compound analyses conducted by the Texas Department of Health (see Exhibit C to this Appendix) on Lewisville's drinking

water indicate that the presence of MTBE has been below the threshold of detection limits each time the testing was conducted since January of 1996. In addition, analysis run on a raw water sample for the presence of MTBE in October of 1999 indicated that the presence of MTBE was below the threshold of detection.

It is not anticipated that increasing the boating capacity of Lewisville Lake by a maximum of 274 vessels over the next ten years would have a significant effect on the levels of MTBE in the water given the information identified above, especially in light of the fact that the EPA has indicated that they have plans to reduce or phase MTBE out of the gasoline supply in the not too distance future. In addition, as noted earlier in the EA, the USACE will act in cooperation and coordination with the TNRCC and EPA to find a solution to concerns if, at any time, a water quality parameter becomes threatened. Therefore, it was determined there would be no significant adverse impact to water quality, except on a temporary basis during the construction phase, resulting from the expansion and/or the addition of water-related recreation use facilities as proposed in the EA

The remaining comments address the expansion or addition of water-related recreation use facilities directed specifically to the City of Little Elm's proposed Cottonwood Park marina development and, to a lesser extent, a proposed marina development in Hidden Cove Park by the City of The Colony.

In regards to the evaluation of proposed marina sites in Hidden Cove Park, the Corps acknowledges that Figure 3 on page 11 of the EA identified the wrong potential sites. The City of The Colony has since provided an updated map identifying three alternative sites that they are considering for marina development in the future (see either Exhibit D to this Appendix or a corrected Figure 3 in the EA). Two of the sites are located in coves on the northern side of the park and one is located in a cove on the southern side of the park. Since the EA did not identify any potential sites for marina development on the northern side of Hidden Cove, it did not address the potential for cumulative impacts as a result of locating two marinas in a concentrated geographical area. The Corps agrees with the comments expressing concerns about the potential for incremental impacts if two marinas were to be located in the same general vicinity. It has therefore been determined, that no sites on the northern side of Hidden Cove Park will be further considered for marina development, only the site identified in as "Option 3", located on the south side of park will be included in the supplement to the Lewisville Lake Master Plan as a potential site for future marina development. The EA adequately addresses the potential environmental impacts to the resources of this site, given the conceptual nature of the plans provided by the City of The Colony. The site would be subjected to additional environmental review, if and when the Corps receives a formal request to develop a marina at this location.

A couple of comments voiced concern that the EA disregards the Lake Lewisville Use Study Development Plan Guidelines regarding low lake levels and minimum design depths for marinas and doesn't properly address water depth limitations at the Cottonwood Park site.

The pertinent water depth design principle regarding marinas, as outlined in the Plan Guidelines states that:

> Marinas - minimum design depth should be 4 feet below the 10-year draw down (503 msl - 4 ft. = 499 msl). Minimum allowable water depths for marinas are five feet below the 5-year draw down (515 msl - 5 ft. = 510 msl). Deeper is better.

Bottom contour depths in the Cottonwood Cove generally range from 497 msl to 515 msl. According to the design plans for the proposed marina at this site, the marina slips will be constructed at the 497 msl contour, thereby, meeting the design and depth criteria as outlined in the Development Plan Guidelines. Exhibit E to this Appendix shows the proposed marina slip design layout at the Cottonwood Park site for each of three phases of construction. It also provides some insight to the history of water depths and fluctuations at Lake Lewisville since the lake reached conservation pool in 1957.

Some of the comments received stated that the EA failed to recognize the loss of open water recreation and natural resources in Cottonwood Park as an adverse impact. It is understood that development of the proposed marina in Cottonwood Park would cause site-specific impacts to existing resources. Basically this is stated in the last paragraph of the Impacts to Terrestrial Resources section of the EA. The conclusion that these site-specific impacts, i.e., loss of open water recreation and loss of natural resources, are not significant is based on the lake as a whole. Resident and/or migrating wildlife and birds that currently use Cottonwood Park and cove will either adapt to the proposed development or will migrate to another area on the lake where there is habitat more conducive to their needs. Boaters, water skiers, and operators of personal water craft will move to another area of the lake more conducive to their wants and needs. On a lake the size of Lewisville Lake there is still large quantities of habitat suitable for the wildlife and bird species that are currently utilizing Cottonwood Park and cove and there is still plenty of open water area suitable for boating, water skiing, and operating personal watercraft. Therefore, the impacts to these resources and/or activities are not considered significant. In much the same way, it was concluded in the EA that there would be no significant adverse impacts to recreation. The loss of some types of recreation activities at site specific areas is overshadowed by the overall benefits of increasing recreational opportunities at the lake by providing more recreational opportunities at the lake as a whole.

Finally, several of the letters received expressed concern about the impact the proposed Cottonwood Park marina would have on the residents in the Fiddler's Green neighborhood located across the cove from the park. The areas of concern include 1) noise impacts, 2) aesthetic impacts, 3) economic impacts, 4) impediments to navigation in the cove and, 5) the inappropriate land use in Fiddler's Green that would result if the proposed marina at Cottonwood Park would be authorized.

1) Specific comments stated that, first, the EA failed to consider WRRUS recommendations regarding noise impacts at the Cottonwood Park site and, secondly, that the EA failed to adequately analyze the noise impacts. The only recommendation included in the WRRUS for the Cottonwood Park site was that an alternate site access would be preferable to the existing access road. The reasons stated for this recommendation were conflicts with adjacent land use (primarily schools and residential development), the potential increases in ambient noise levels, increased traffic on Lobo Lane, and degradation of aesthetic values. Mayor Jim Pelley of Little Elm provided a letter (Exhibit F to this Appendix), dated October 17, 2000, that identifies Little Elm's willingness to consider funding an alternate access route to Cottonwood Park in order to relieve traffic along Lobo Lane if, in the opinion of the Little Elm School Board, the traffic along Lobo Lane becomes excessive as a result of the proposed development of the marina. Traffic increases along Lobo Lane, as a result of development of the proposed marina, would generally be during periods when the schools are typically out for the weekend or the summer, alleviating the traffic concerns in regards to the schools located along Lobo Lane. The closest residential neighborhood to Cottonwood Park and the proposed marina site is the Shell Beach neighborhood located adjacent to the northwest boundary of Cottonwood Park. Several of the homeowners in the Shell Beach housing subdivision share a common boundary with Cottonwood Park and would be closer to Lobo Lane and the proposed marina than the residents of Fiddler's Green. We received no letters of concern from any resident of this neighborhood; in fact, we received 12 letters of support for the proposed marina development from residents of the Shell Beach subdivision.

   Secondly, while there is Federal legislation related to the noise environment, including the Noise Control Act of 1972, the Quiet Communities Act of 1978, and various highway and aviation laws, there are no Federal noise standards. However, several key federal agencies have agreed to joint efforts to incorporate noise considerations in development planning. This cooperative effort has resulted in the development of noise-impact-related data such as noise-zone classifications and land-use compatibility guidelines. L_{dn} is the mathematical symbol for the day night average sound level, the most advanced descriptor currently in general use. It can also be abbreviated as DLN. The day night average sound level is the 24-hour average sound level expressed in decibels, obtained after the addition of a 10-decibel penalty for sound levels that occur at night between 10 PM and 7 AM. Generally, any DLN equal to or less than 65 dB would be considered acceptable for residential areas, according to the Federal Interagency Committee on Urban Noise (1980, p.5). It is difficult to imagine what 65 dB might sound like, but in looking at a table of Common Sounds in Decibels (HUD 1985), the sounds that would be heard by someone standing near freeway auto traffic would approximate the 65 decibels level.

   It is anticipated that the loudest noise sources generated by the marina would be the sounds made by the boat motors. These sounds would be reduced by the enforcement

of a "no wake" zone in the near vicinity of the marina. This would mean that boats would have to travel into and out of the marina and cove at generally less than 5 mph. According to some of the letters received from residents of Fiddler's Green, ski boats and personal watercraft regularly use this cove is for recreational boating activities. Certainly the sounds made by boats entering and exiting a marina at less than 5 mph would be less than the sounds now being generated by boats and PWC being operated at greater speeds.

It is not anticipated that implementation of the proposed marina would generate a DNL that is above this threshold guideline for any of the residential neighborhoods near the Cottonwood Park site. According to the WRRUS, the peak use times for marinas at Lewisville Lake are on weekends (Sunday between 4 PM and 6 PM followed by Saturday evenings between 5 PM and 7 PM. Peak use during summer weekdays tends to in the evening between the hours of 6 PM and 9 PM. Use drops off rapidly after these hours for all types of watercraft on all days. Therefore, the 10-decibel penalty applied to sounds between the hours of 10:00 PM and 7:00 AM would not be applied.

2) A couple of the comments stated that the EA makes arbitrary conclusions concerning aesthetic impacts. Even though numerous definitions for "aesthetics" have been developed, there is no uniform agreement among professionals or the public related to any one of the definitions. Furthermore, in applying a given conception of aesthetics, what is particularly pleasing in terms of visual quality to one individual may not necessarily be pleasing to another individual. As the old adage goes, "Beauty is in the eye of the beholder." The conclusion reached in the EA was that, "overall, implementation of the proposed actions is not anticipated to cause significant adverse impacts. Final plans and specifications submitted for USACE approval would be required to blend with existing facilities and comply with the lake and/or given parks architectural theme." In addition, these types of facilities are typically inspected on an annual basis and the developers are required to keep their facilities in good repair.

Cottonwood Park is located in the Town of Little Elm and currently leased to town. The town and surrounding area is experiencing rapid growth, especially in the development of residential communities. A few years ago, the Fiddler's Green neighborhood was located in what would have been considered a rural area, but today that location is rapidly becoming urban in nature, as more and more housing developments are built on what once was undeveloped land. The rapid population growth is putting additional pressure on the town to provide recreation opportunities for its expanding population. The anticipated future conditions of Cottonwood Park, even without the development of the proposed marina, would be a fully developed park with many intensive recreation features. In fact, the Town of Little Elm proposed development of a nature trail, picnic areas, RV campsites, group shelters, gatehouse, fishing pier, lighthouse, and an athletic complex with a football/soccer field, a baseball field, and tennis courts in the Lewisville Lake PEA. The FONSI

executed on September 30, 1999 that completed the PEA process covered these activities and they are currently being incorporated into a supplement to the Lewisville Lake Master Plan. It is just a matter of time before the park is developed.

It is important to note that development of the marina and associated facilities in Cottonwood Park would not block the view of the lake from the residents of Fiddler's Green. Instead of being able to view an open water cove and an undeveloped park across that cove, development of the proposed marina would add structures into the residents' north facing view shed that do not currently exist. However, the type of structures to be added are those consistent with the typical water and land related activities that a person might expect to find in a public recreation area on a lake. Obviously, not all parks contain marinas, but many do contain either a fishing pier or a mooring dock. It was observed in reconnaissance visits to the Cottonwood Park site that some residents of Fiddler's Green have boats and that a few of these vessels are often seen moored or beached near to the Fiddler's Green side of the cove. Since this is the case, it is obvious that the site of boats being moored within their viewshed is not displeasing to some residents of the neighborhood. In addition, as was noted earlier in this appendix, several residents of Shell Beach neighborhood, a housing subdivision located adjacent to Cottonwood Park whose residents would also have their viewshed altered by the development of the proposed marina, express support of the marina development. Again, beauty is in the eye of the beholder.

3) The third concern expressed by some of the residents of the Fiddler's Green neighborhood is that the EA failed to consider the economic impacts to owners of property in Fiddler's Green. The reason that the EA doesn't specifically address this issue is because no significant adverse economic impacts are anticipated as a result of the proposed marina development.

4) The potential of the proposed marina to impede navigation in Cottonwood Cove is a fourth concern identified by some of the residents of Fiddler's Green. In response to this concern, the Corps requested that the Town of Little Elm provide conceptual plan view drawings of the proposed marina facility showing each of the three phases of development in relation to the natural contours of the cove, not only on the Cottonwood Park side of the cove, but also on the Fiddler's Green side. These drawings can be found in Exhibit E to this Appendix. At the 503 msl contour (10-year draw down level), it was noted that at full build out, the marina docks would extend approximately ¾ the width of the cove at its narrowest point. The distance between the outer extent of the marina docks (at this point) and the 503 msl contour on the Fiddler's Green side of the cove would be roughly 187 feet. While this distance would be enough to provide a navigational lane along the Fiddler's Green side of the cove past the marina facility for most boats, the depth at low water levels would preclude its use by some vessels. It has therefore been determined that build out of the third phase of development at the proposed Cottonwood Park site would be conducted so that additional slips would be located on the interior side of the marina

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docks (or some other approved design variation) and the docks would not be further extended into the cove over the Phase One and Two build out (Exhibit E). Even with construction of a breakwater beyond the docks to protect the slipped vessels from wind and wave action, this will provide approximately 250 feet for a navigational lane to the back of the cove, a distance of sufficient width and depth to provide access to most any type vessel.

5) In addition, this 250 foot lane would alleviate another concern of some residents of the Fiddler's Green neighborhood. This fifth concern is that the proposed marina development would result in inappropriate land use on Fiddler's Green side of the cove. A strip of land along the shoreline on this side of the cove is designated as fish and wildlife management lands in the 1985 Master Plan. The argument seems to be that since marina develop is only appropriate on designated recreation lands, allowing the proposed marina development to encroach on the fish and wildlife management lands located across the cove would cause adverse impacts to the designated land use. Providing a 250 foot buffer between the marina development and the fish and wildlife management lands would eliminate the potential for this to be a problem in the future. In addition, it should be noted that mowing down to the water's edge and mooring boats on the shoreline, common practices among some residents of Fiddler's Green, cause more adverse impacts to the designated fish and wildlife management lands along the Fiddler's Green side of the cove than would operation of a marina out in the cove.

Several comments expressing support for the proposed Cottonwood Park marina development were received during the public comment period. Reasons given in support of the proposed development are as follows: 1) development of marina in Cottonwood Park would serve as economic enhancement to community of Little Elm; 2) development of proposed marinas would relieve the lack of marina facilities in northeast portion of lake; and 3) marina development would enhance the recreation amenities in the northeast region of the lake.

EXHIBIT A

CITY OF DALLAS MTBE WATER QUALITY DATA

1999/2000 Methyl Tertiary Butyl Ether (MTBE) Study

Method: EPA 524.2 (PALS)
Units: µg/L
MDL: <0.67 µg/L

Dallas Water Utilities
Watershed Management

Site		Oct-99 Lab *LNS	Nov-99 Lab *LNS	Dec-99 Lab DWU	Jan-00 Lab DWU	Feb-00 Lab DWU	Mar-00 Lab DWU	Apr-00 Lab DWU	May-00 Lab DWU	Jun-00 Lab DWU	Jul-00 Lab DWU	Aug-00 Lab DWU	Sep-00 Lab DWU	Oct-00 Lab DWU
L5	Lewisville Lake @ Old Lake Dallas	<5.00	<5.00	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	0.72	<0.67	<0.67	<0.67
L6	Lewisville Lake @ Entrance to Little Elm Creek	<5.00	<5.00	2.73	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	0.82	<0.67	<0.67	<0.67
L7	Lewisville Lake @ Hickory Creek Arm	<5.00	<5.00	<0.67	<0.67	<0.67	1.56	<0.67	<0.67	3.50	8.64	3.07	3.20	<0.67
LM	Lewisville Lake @ Eagle Point Marina	<5.00	<5.00	<0.67	<0.67	4.5	1.3	1.11	<0.67	4.49	7.14	3.7	3.43	<0.67
LD	Lewisville Lake @ The Outfall	<5.00	<5.00	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	1.2	0.91	0.82	<0.67

*LNS Lab indicate analytical results received from LNS Environmental Services, Inc. 903 N. Bowser, Suite 230 Richardson, Texas 75081 (972) 699-3772 .

Sampling Entity	Dates of Studies	Range of MTBE Results	Scope of study Lewisville Lake
Dallas Water Utilities	December 1999 - Ongoing	0 - 8.64 µg/L	Performed on weekdays only, no samples taken inside marinas or at boat ramps.
Unversity of North Texas	February 1999 - September 1999	0 - 16.7 µg/L	Performed on weekends, holidays, at boat ramps, marinas, as well as open lake samples

1999/2000 Methyl Tertiary Butyl Ether (MTBE) Study

Method: EPA 524.2 (PALS)
Units: µg/L
MDL: <0.67 µg/L

Dallas Water Utilities
Watershed Management

Site		Oct-99 Lab *LNS	Nov-99 Lab *LNS	Dec-99 Lab DWU	Jan-00 Lab DWU	Feb-00 Lab DWU	Mar-00 Lab DWU	Apr-00 Lab DWU	May-00 Lab DWU	Jun-00 Lab DWU	Jul-00 Lab DWU	Aug-00 Lab DWU	Sep-00 Lab DWU	Oct-00 Lab DWU
G3	Grapevine Lake @ Sneaky Petes Marina	<5.00	<5.00	<0.67	7.7	1.4	n/s	1.46	3.3	2.09	5.27	5.22	2.76	<0.67
G4	Grapevine Lake @ the Outfall	<5.00	<5.00	<0.67	1.1	<0.67	n/s	<0.67	1.45	2.85	4.4	1.42	1.61	<0.67
G5	Grapevine Lake @ midlake	<5.00	<5.00	<0.67	<0.67	0.7	n/s	<0.67	1.38	1.48	3.16	2.41	1.74	<0.67
GM	Grapevine Lake @ Silver Lake Marina	5.48	<5.00	<0.67	<0.67	1.9	n/s	1.23	<0.67	2.83	7.28	<0.67	1.48	0.97

Sampling Entity	Dates of Studies	Range of MTBE Results	Scope of study Grapevine Lake
Dallas Water Utilities	December 1999 - Ongoing	0 - 7.7 µg/L	Performed on weekdays only, no samples taken inside marinas or at boat ramps.

1999/2000 Methyl Tertiary Butyl Ether (MTBE) Study

Method: EPA 524.2 (PALS)
Units: µg/L
MDL: <0.67 µg/L

Dallas Water Utilities
Watershed Management

Site		Oct-99 Lab *LNS	Nov-99 Lab *LNS	Dec-99 Lab DWU	Jan-00 Lab DWU	Feb-00 Lab DWU	Mar-00 Lab DWU	Apr-00 Lab DWU	May-00 Lab DWU	Jun-00 Lab DWU	Jul-00 Lab DWU	Aug-00 Lab DWU	Sep-00 Lab DWU	Oct-00 Lab DWU
R4	Ray Roberts Lake @ F.M. 3002	<5.00	<5.00	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	0.85	<0.67	<0.67	0.68
R5	Ray Roberts Lake @ Old Hwy 455	<5.00	<5.00	<0.67	<0.67	6.75	1.21	<0.67	<0.67	0.76	4.24	1.32	<0.67	<0.67
R6	Ray Roberts Lake @ The Outfall	<5.00	<5.00	<0.67	<0.67	2.35	<0.67	<0.67	<0.67	0.68	1.7	1.21	<0.67	<0.67
RM	Ray Roberts Lake @ Ray Roberts Marina	<5.00	<5.00	<0.67	<0.67	3.26	0.83	1.89	0.83	2.70	2.29	3.21	<0.67	3.86

Sampling Entity	Dates of Studies	Range of MTBE Results	Scope of study Ray Roberts Lake
Dallas Water Utilities	December 1999 - Ongoing	0 - 6.75 µg/L	Performed on weekdays only, no samples taken inside marinas or at boat ramps.
Alan Plummer & Assoc.	August 2000 - Ongoing	0 - 18.1 µg/L	Performed on weekends, holidays, at boat ramps, marinas, as well as open lake samples

1999/2000 Methyl Tertiary Butyl Ether (MTBE) Study

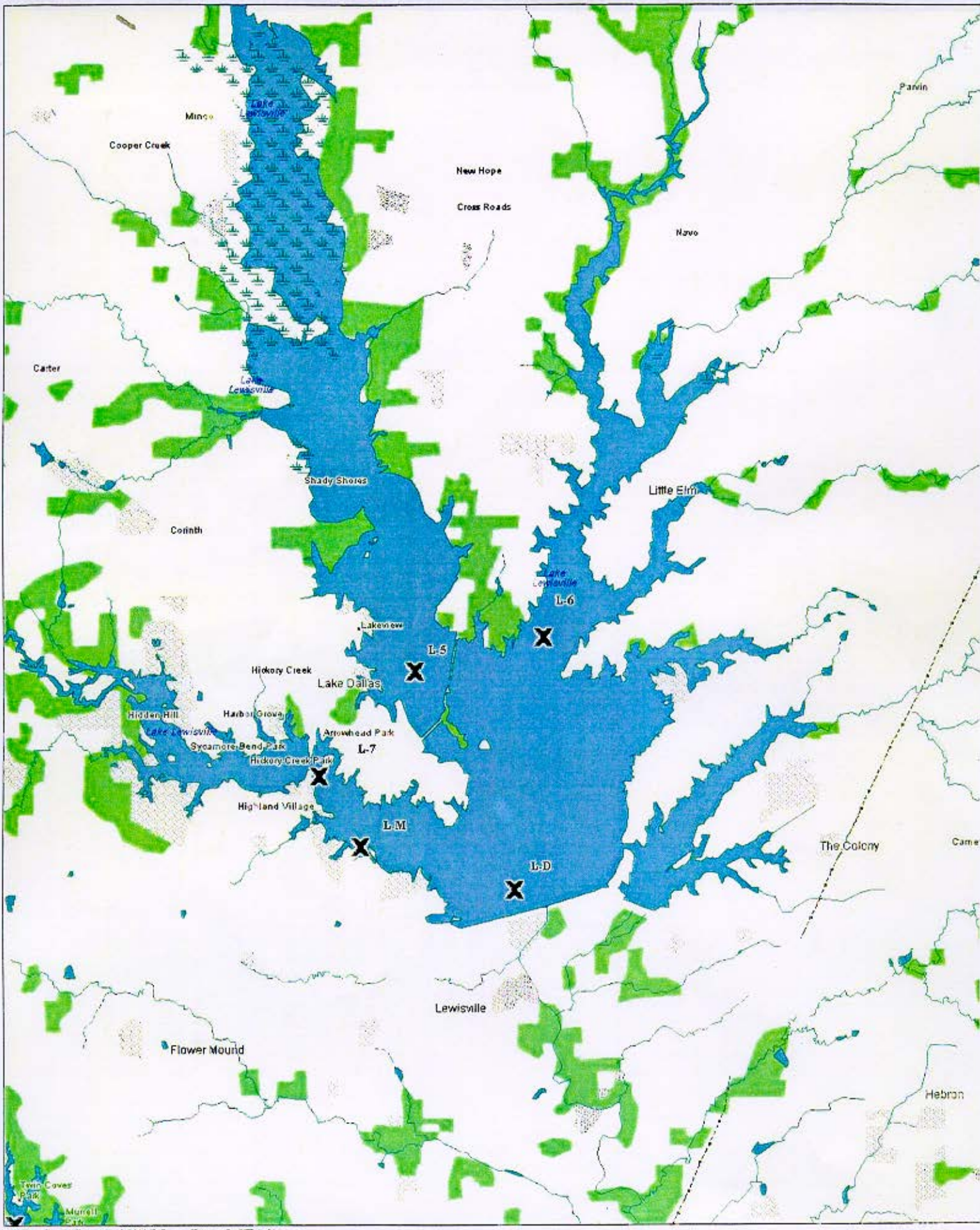
Method: EPA 524.2 (PALS)
Units: µg/L
MDL: <0.67 µg/L

Dallas Water Utilities
Watershed Management

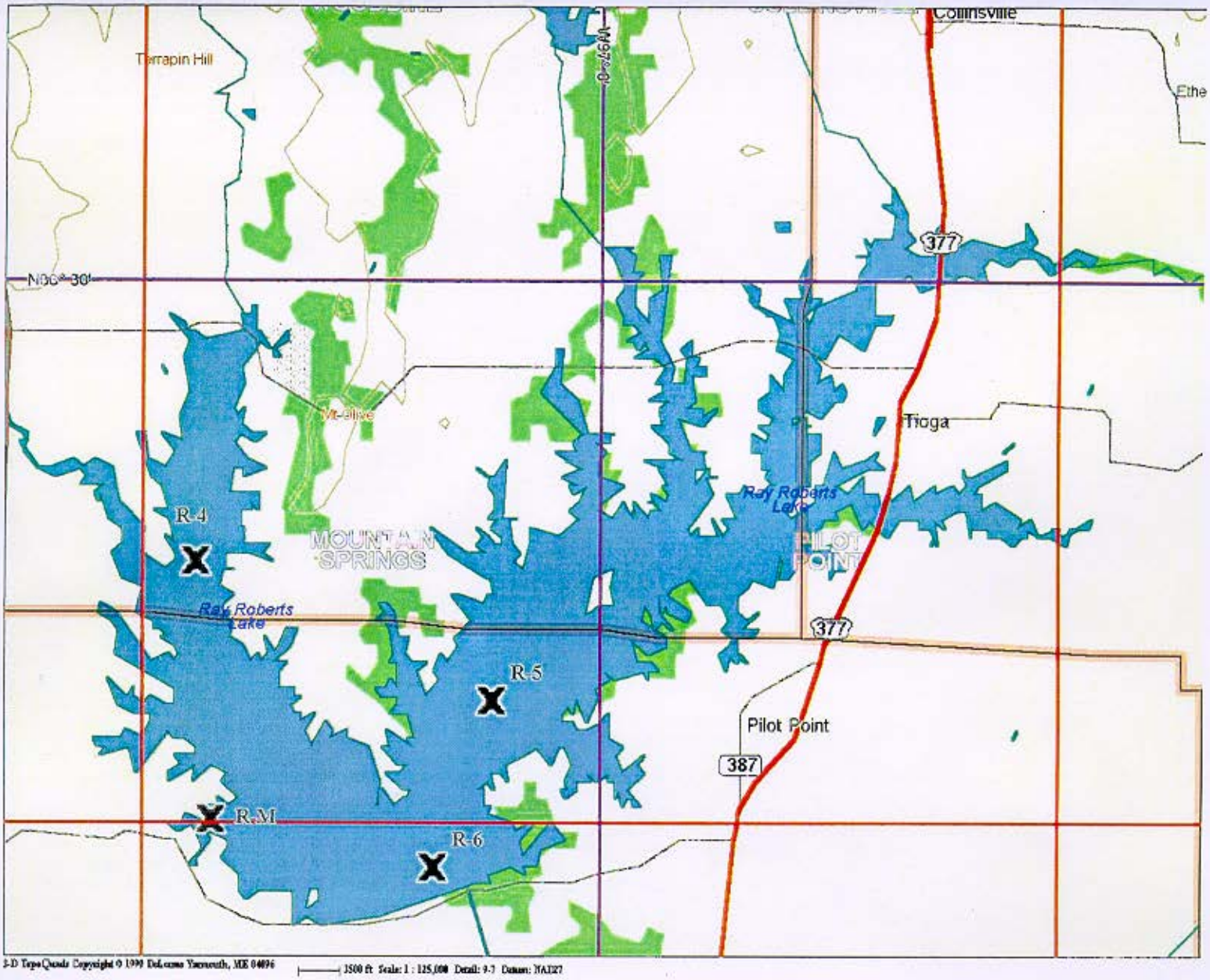
Site		Oct-99 Lab *LNS	Nov-99 Lab *LNS	Dec-99 Lab DWU	Jan-00 Lab DWU	Feb-00 Lab DWU	Mar-00 Lab DWU	Apr-00 Lab DWU	May-00 Lab DWU	Jun-00 Lab DWU	Jul-00 Lab DWU	Aug-00 Lab DWU	Sep-00 Lab DWU	Oct-00 Lab DWU
T1	Tawakoni Lake @ The Outfall	<5.00	<5.00	<0.67	2	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
T2	Tawakoni Lake @ The Intake	<5.00	<5.00	<0.67	5.4	<0.67	0.69	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
T3	Tawakoni Lake @ F.M 35	<5.00	<5.00	<0.67	16	<0.67	6.12	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
T4	Tawakoni Lake @ Sabine River Arm	<5.00	<5.00	<0.67	23	<0.67	1	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
TM	Tawakoni Lake @ The Caddo Fishing Barge Marina	<5.00	<5.00	<0.67	<0.67	<0.67	7.32	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67

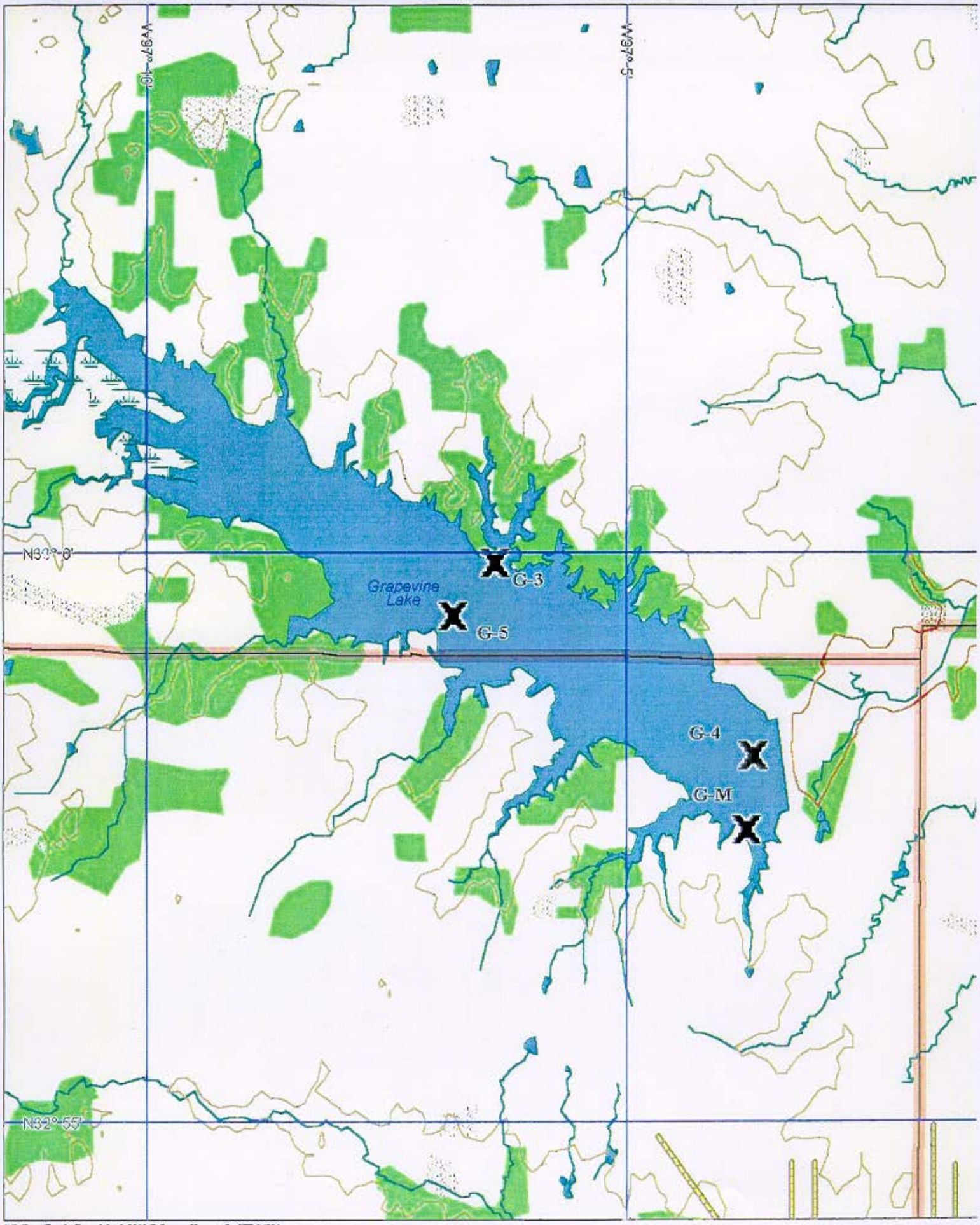
Sampling Entity	Dates of Studies	Range of MTBE Results	Scope of study Tawakoni Lake
Dallas Water Utilities	December 1999 - Ongoing	0 - 23 µg/L	Performed on weekdays only, no samples taken inside marinas or at boat ramps.

*LNS Lab indicate analytical results received from LNS Environmental Services, Inc. 903 N. Bowser, Suite 230 Richardson, Texas 75081 (972) 699-3772 .
LNS Lab Method = EPA 8260B, MDL =5.00 µg/L
n/s = No Sample Taken



3500 ft Scale: 1 : 125,000 Detail: 10-5 Datum: NAD27


Terrapin Hill
Collinsville
Ethe
377
33°30'
Mt. Olive
Trioga
Ray Roberts Lake
MOUNTAIN SPRINGS
PILOT POINT
R-4
Ray Roberts Lake
377
R-5
Pilot Point
387
R-M
R-6
3-D Topo Quads Copyright © 1999 DeLorme Yarmouth, ME 04096
3500 ft Scale: 1 : 125,000 Detail: 9-7 Datum: NAD27



2000 ft Scale: 1 : 81,250 Detail: 10-5 Datum: NAD27

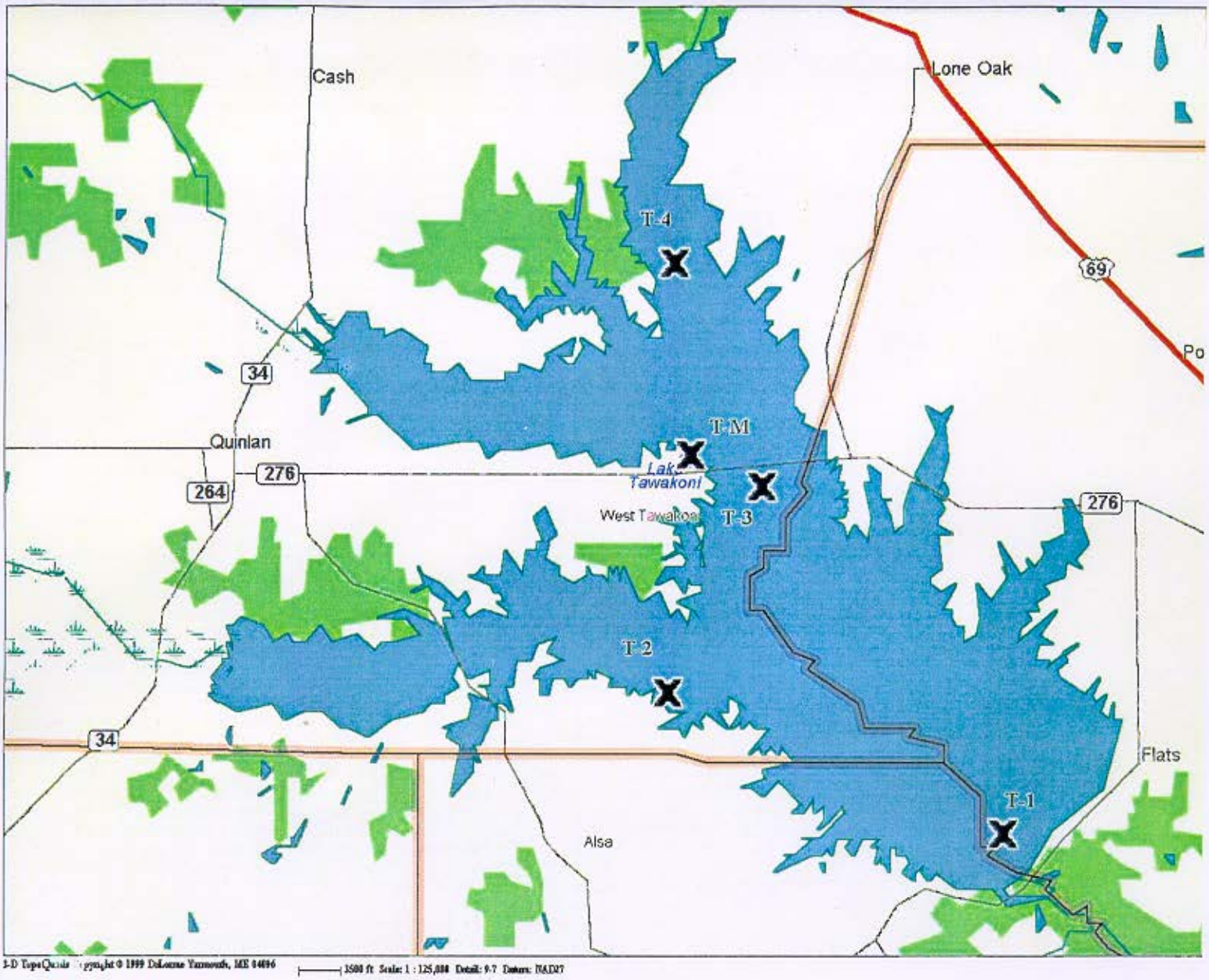

Cash
Lone Oak
T-4
69
34
Quinlan
T-M
276
264
Lake Tawakoni
West Tawakoni
T-3
276
T-2
34
Flats
T-1
Alsa
3500 ft Scale: 1 : 125,000 Detail: 9-7 Datum: NAD27

EXHIBIT B

UPPER TRINITY REGIONAL WATER DISTRICT WATER QUALITY DATA

OXIDOR
Environmental Services

Hector Ortiz
Upper Trinity Reg. Water District
396 W. Main Street
Lewisville, TX 75057

Date: 4/12/00
OXIDOR JOB NUMBER: 5698
Sample Number: 5698-01

PROJECT DESCRIPTION:
Sample ID: Raw H2O
Sample Date: 4/11/00
Sample Received: 4/12/00
Date Analyzed: 4/12/00
Method: 8021
Analyst: RB
QC Batch: MTBE041200L

PARAMETER	RESULTS	Units	Report Limit
Methyl-t-butyl Ether	<1.0	µg/L	1.0

Surrogate	Percent Recovery
4-Bromofluorobenzene	104

Reddy Korsapati, Ph.D
Manager, Analytical Division

OXIDOR
Environmental Services

Hector Ortiz
Upper Trinity Reg. Water District
396 W. Main Street
Lewisville, TX 75057

Date: 5/22/00
OXIDOR JOB NUMBER: 5741
Sample Number: 5741-01

PROJECT DESCRIPTION: Water Sampling-Hector Ortiz
Sample ID: RAW
Sample Date: 5/16/00
Sample Received: 5/16/00
Date Analyzed: 5/18/00
Method: 8021
Analyst: RB
QC Batch: MTBE051800L

PARAMETER	RESULTS	Units	Report Limit
MTBE	<1.0	µg/L	1.0

Surrogate	PercentRecovery
4-Bromofluorobenzene	89

Reddy Korsapati, Ph.D
Manager, Analytical Division

OXIDOR
Environmental Services

Hector Ortiz
Upper Trinity Reg. Water District
396 W. Main Street
Lewisville, TX 75057

Date: 6/19/00
OXIDOR JOB NUMBER: 5786
Sample Number: 5786-01

PROJECT DESCRIPTION: Lewisville Trmt. Plant
Sample ID: RAW
Sample Date: 6/12/00
Sample Received: 6/13/00
Date Analyzed: 6/13/00
Method: 602
Analyst: RB
QC Batch: MTBE061300L

PARAMETER	RESULTS	Units	Report Limit
MTBE	<1.0	µg/L	1.0

Surrogate	Percent Recovery
4-Bromofluorobenzene	77

Reddy Korsapati, Ph.D
Manager, Analytical Division

K. Bowes, QA/QC Coordinator
for R Korsapati

OXIDOR
Environmental Services

Hector Ortiz
Upper Trinity Reg. Water District
396 W. Main Street
Lewisville, TX 75057

Date: 7/28/00
OXIDOR JOB NUMBER: 5898
Sample Number: 5898-01
Sample ID: Raw

PROJECT DESCRIPTION: Lewisville Trtmt. Plant
Sample Date: 7/24/00
Sample Received: 7/25/00
Date Analyzed:
Method: 602
Analyst:
QC Batch: MTBE072600L

PARAMETER	RESULTS	Units	Report Limit
MTBE	<1.00	µg/L	1.0

Surrogate	PercentRecovery
4-Bromofluorobenzene	105

James D. Lynch

James D. Lynch, Ph.D.
Manager, Analytical Division

OXIDOR
Environmental Services

Hector Ortiz
Upper Trinity Reg. Water District
396 W. Main Street
Lewisville, TX 75057

Date: 8/28/00
OXIDOR JOB NUMBER 5974
Sample Number: 5974-03
Sample ID: RAW

PROJECT DESCRIPTION Lewisville Trtmt. Plant
Sample Date: 8/21/00
Sample Received: 8/22/00
Date Analyzed: 8/25/00
Method: 602
Analyst: RB
QC Batch: MTBE082500L

PARAMETER	RESULTS	Units	Report Limit
MTBE	<1.0	µg/L	1.0

Surrogate	Percent Recovery
4-Bromofluorobenzene	0

James D. Lynch

James D. Lynch, Ph.D.
Manager, Analytical Division

OXIDOR
Environmental Services

Hector Ortiz
Upper Trinity Reg. Water District
396 W. Main Street
Lewisville, TX 75057

Date: 10/5/00
OXIDOR JOB NUMBER 6113
Sample Number: 6113-01
Sample ID: Raw

PROJECT DESCRIPTION Lewisville Trtmt. Plant
Sample Date: 10/2/00
Sample Received: 10/3/00
Date Analyzed: 10/4/00
Method: 602
Analyst: RB
QC Batch: 100400MBTEXL

PARAMETER	RESULTS	Units	Report Limit
MTBE	<1.0	µg/L	1

Surrogate	Percent Recovery
4-Bromofluorobenzene	88

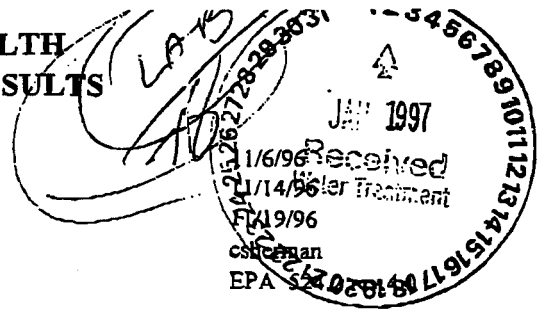
James D. Lynch

James D. Lynch, Ph.D.
Manager, Analytical Division

EXHIBIT C

CITY OF LEWISVILLE WATER QUALITY DATA

TEXAS DEPARTMENT OF HEALTH
VOLATILE ORGANICS GC/MS RESULTS



Submitter Number	DWS 0610004	Date Collected:	11/6/96
TDH Sample Number	**EP6-15246**	Date Analyzed:	11/14/96
Data File Number:	1114-15.D	Report Date:	11/19/96
Sample Type:	water	Analyst:	cstedman
Units:	µg/l	Method:	EPA 524.2

Trihalomethanes [40 CFR §141.30]	Amount
Bromoform	<0.5
Bromodichloromethane	**1.8**
Chloroform	**3.4**
Dibromochloromethane	<0.5

Regulated Cmpds. [40 CFR §141.61(a)]	
Benzene	<0.5
Carbon tetrachloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5
1,2-Dichloroethane	<0.5
1,1-Dichloroethene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethene	<0.5
Methylene chloride (DCM)	<0.5
1,2-Dichloropropane	<0.5
Ethyl benzene	<0.5
Styrene	<0.5
Tetrachloroethene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,1-Trichloroethane	<0.5
1,1,2-Trichloroethane	<0.5
Trichloroethene	<0.5
Vinyl Chloride	<0.5
m&p Xylene	<1.0
o-Xylene	<0.5

Monitored Cmpds. [40 CFR §141.40(j)]	
Bromochloromethane	<1.0
n-Butylbenzene	<1.0
s-Butylbenzene	<1.0
t-Butylbenzene	<1.0
Dichlorodifluoromethane	<2.0
Hexachlorobutadiene	<1.0
Isopropylbenzene	<1.0
4-Isopropyltoluene	<1.0
Naphthalene	<1.0
n-Propylbenzene	<1.0
1,2,3-Trichlorobenzene	<1.0
Trichlorofluoromethane	<2.0
1,2,4-Trimethylbenzene	<1.0
1,3,5-Trimethylbenzene	<1.0

Monitored Cmpds. [40 CFR §141.40(e)]	Amount
Bromobenzene	<1.0
Bromomethane	<2.0
Chloromethane	<2.0
Chloroethane	<2.0
2-Chlorotoluene	<1.0
4-Chlorotoluene	<1.0
Dibromomethane	<1.0
1,3-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,3-Dichloropropane	<1.0
2,2-Dichloropropane	<1.0
1,1-Dichloropropene	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0
1,1,1,2-Tetrachloroethane	<1.0
1,1,2,2-Tetrachloroethane	<1.0
1,2,3-Trichloropropane	<1.0

Other Compounds	
Acetone	<10
Acrylonitrile	<10
2-Butanone (MEK)	<10
Carbon disulfide	<1.0
1,2-Dibromo-3-chloropropane	<1.0
1,2-Dibromoethane	<1.0
Ethyl methacrylate	<1.0
2-Hexanone	<1.0
Iodomethane	<2.0
Methyl methacrylate	<1.0
4-Methyl-2-pentanone (MIBK)	<2.0
Methyl-t-butyl ether	<2.0
Tetrahydrofuran	<2.0
Vinyl acetate	<10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	µg/l
Sulfur dioxide	80

comments:

Form Rev.11/01/96

Approval

TEXAS DEPARTMENT OF HEALTH
VOLATILE ORGANICS GC/MS RESULTS

Submitter Number	DWS 0610004	Date Collected	3/14/96
TDH Sample Number	EP6-3935	Date Analyzed	03/21/96
Data File Number	20MAR024.D	Report Date	4/3/96
Sample Type:	water	Analyst:	csherman
Units:	µg/L	Method:	EPA 524.2 rev. 4.1

Trihalomethanes [40CFR §141.30]	Amount
Bromoform	< 0.5
Bromodichloromethane	**2.6**
Chloroform	**2.8**
Dibromochloromethane	**1.2**

Regulated Cmpds. [40 CFR §141.61(a)]	
Benzene	< 0.5
Carbon tetrachloride	< 0.5
Chlorobenzene	< 0.5
1,2-Dichlorobenzene	< 0.5
1,4-Dichlorobenzene	< 0.5
1,2-Dichloroethane	< 0.5
1,1-Dichloroethene	< 0.5
cis-1,2-Dichloroethene	< 0.5
trans-1,2-Dichloroethene	< 0.5
1,2-Dichloropropane	< 0.5
Ethyl benzene	< 0.5
Methylene chloride (DCM)	< 0.5
Styrene	< 0.5
Tetrachloroethene	< 0.5
Toluene	< 0.5
1,2,4-Trichlorobenzene	< 0.5
1,1,1-Trichloroethane	< 0.5
1,1,2-Trichloroethane	< 0.5
Trichloroethene	< 0.5
Vinyl chloride	< 0.5
m&p-Xylene	< 1.0
o-Xylene	< 0.5

Monitored Cmpds. [40 CFR §141.40(i)]	
Bromochloromethane	< 1.0
n-Butylbenzene	< 1.0
sec-Butylbenzene	< 1.0
tert-Butylbenzene	< 1.0
Dichlorodifluoromethane	< 2.0
Trichlorofluoromethane	< 2.0
Hexachlorobutadiene	< 1.0
4-Isopropyltoluene	< 1.0
Naphthalene	< 1.0
Isopropylbenzene	< 1.0
n-Propylbenzene	< 0.5
1,2,3-Trichlorobenzene	< 1.0
1,2,4-Trimethylbenzene	< 1.0
1,3,5-Trimethylbenzene	< 1.0

Monitored Cmpds. [40 CFR §141.40(e)]	Amount
Bromobenzene	< 1.0
Bromomethane	< 2.0
Chloromethane	< 2.0
Chloroethane	< 2.0
2-Chlorotoluene	< 1.0
4-Chlorotoluene	< 1.0
Dibromomethane	< 1.0
1,3-Dichlorobenzene	< 1.0
1,1-Dichloroethane	< 1.0
1,3-Dichloropropane	< 1.0
2,2-Dichloropropane	< 1.0
1,1-Dichloropropene	< 1.0
cis-1,3-Dichloropropene	< 1.0
trans-1,3-Dichloropropene	< 1.0
1,1,1,2-Tetrachloroethane	< 1.0
1,1,2,2-Tetrachloroethane	< 1.0
1,2,3-Trichloropropane	< 1.0

Other Compounds	
Acetone	< 10
Acrylonitrile	< 10
Carbon disulfide	< 1.0
2-Chloroethyl vinyl ether	< 20
1,2-Dibromo-3-chloropropane	< 1.0
1,2-Dibromoethane	< 1.0
Ethyl methacrylate	< 1.0
2-Hexanone	< 1.0
Iodomethane	< 2.0
2-Butanone (MEK)	< 10
Methyl methacrylate	< 1.0
Methyl-t-butyl ether	< 2.0
4-Methyl-2-pentanone (MIBK)	< 2.0
Tetrahydrofuran	< 2.0
trans-1,4-Dichloro-2-butene	< 20
Vinyl acetate	< 10

Tentative identification of the largest non-priority pollutant peaks provided by comparison with EPA/NIH mass spectral library. Quantitation is as compared to the internal standards and the values should be regarded as approximate.

Tentative Compound ID	µg/L
NONE	

comments:

Form Rev 02/22/96

Approval: [signature]

TEXAS DEPARTMENT OF HEALTH
VOLATILE ORGANICS GC/MS RESULTS

Submitter Number	DWS 0610004	Date Collected:	8/6/96
TDH Sample Number	EP6-11177	Date Analyzed:	8/9/96
Data File Number:	0809-06.D	Report Date:	8/12/96
Sample Type:	water	Analyst:	M. Rahman
Units:	µg/l	Method:	EPA 524.2 rev.4.0

Trihalomethanes [40 CFR §141.30]	Amount
Bromoform	<0.5
Bromodichloromethane	2.2
Chloroform	2.7
Dibromochloromethane	0.9

Regulated Cmpds. [40 CFR §141.61(a)]	
Benzene	<0.5
Carbon tetrachloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5
1,2 - Dichloroethane	<0.5
1,1-Dichloroethene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethene	<0.5
Methylene Chloride (DCM)	<0.5
1,2-Dichloropropane	<0.5
Ethylbenzene	<0.5
Styrene	<0.5
Tetrachloroethene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,1-Trichloroethane	<0.5
1,1,2-Trichloroethane	<0.5
Trichloroethene	<0.5
Vinyl chloride	<0.5
m&p-Xylene	<1.0
o-Xylene	<0.5

Monitored Cmpds. [40 CFR §141.40(j)]	
Bromochloromethane	<1.0
n-Butylbenzene	<1.0
sec-Butylbenzene	<1.0
tert-Butylbenzene	<1.0
Dichlorodifluoromethane	<2.0
Hexachlorobutadiene	<1.0
Isopropylbenzene	<1.0
4-Isopropyltoluene	<1.0
Naphthalene	<1.0
n-Propylbenzene	<1.0
1,2,3-Trichlorobenzene	<1.0
Trichlorofluoromethane	<2.0
1,2,4-Trimethylbenzene	<1.0
1,3,5-Trimethylbenzene	<1.0

Monitored Cmpds. [40 CFR §141.40(c)]	
Bromobenzene	<1.0
Bromomethane	<2.0
Chloromethane	<2.0
Chloroethane	<2.0
2-Chlorotoluene	<1.0
4-Chlorotoluene	<1.0
Dibromomethane	<1.0
1,3-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,3-Dichloropropane	<1.0
2,2-Dichloropropane	<1.0
1,1 - Dichloropropene	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0
1,1,1,2-Tetrachloroethane	<1.0
1,1,2,2- Tetrachloroethane	<1.0
1,2,3-Trichloropropane	<1.0

Other Compounds	
Acetone	<10
Acrylonitrile	<10
2-Butanone (MEK)	<10
Carbon disulfide	<1.0
2-Chloroethyl vinyl ether	<20
1,2-Dibromo-3-chloropropane	<1.0
1,2-Dibromoethane	<1.0
trans-1,4-Dichloro-2-butene	<20
Ethyl methacrylate	<1.0
2-Hexanone	<1.0
Iodomethane	<2.0
Methyl isobutyl ketone (MIBK)	<2.0
Methyl methacrylate	<1.0
Methyl -t - butylether	<2.0
Tetrahydrofuran	<2.0
Vinyl acetate	<10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	µg/l
None	

comments

SEP 1996
Received
Water Treatment

Approved

Form Rev 02/22/96

RECEIVED TIME NOV.30. 11:07AM

PRINT TIME NOV.30. 11:15AM

TEXAS DEPARTMENT OF HEALTH
VOLATILE ORGANICS COMPOUNDS by GC/MS

Submitter Number	DWS 0610004	Date Collected	2/12/97
TDH Sample Number	EP97-01549	Date Extracted	2/22/97
Method:	EPA 524.2 rev. 4.0 VOC's	Date Analyzed	2/22/97
Data File Number	21FEB022.D	Analyst:	csherman
Q.C. File	OV030221.S	Dilution Factor	1
Sample Type:	water	Concentration Units:	µg/l

Trihalomethanes [40CFR §141.30]	Result
Bromoform	< 0.5
Bromodichloromethane	4.8
Chloroform	5.7
Dibromochloromethane	1.7

Regulated Cmpds. [40 CFR §141.61(a)]	
Benzene	< 0.5
Carbon tetrachloride	< 0.5
Chlorobenzene	< 0.5
1,2-Dichlorobenzene	< 0.5
1,4-Dichlorobenzene	< 0.5
1,2-Dichloroethane	< 0.5
1,1-Dichloroethene	< 0.5
cis-1,2-Dichloroethene	< 0.5
trans-1,2-Dichloroethene	< 0.5
1,2-Dichloropropane	< 0.5
Ethyl benzene	< 0.5
Methylene chloride (DCM)	< 0.5
Styrene	< 0.5
Tetrachloroethene	< 0.5
Toluene	< 0.5
1,2,4-Trichlorobenzene	< 0.5
1,1,1-Trichloroethane	< 0.5
1,1,2-Trichloroethane	< 0.5
Trichloroethene	< 0.5
Vinyl chloride	< 0.5
m&p-Xylene	< 1.0
o-Xylene	< 0.5

Monitored Cmpds. [40 CFR §141.40(j)]	
Bromochloromethane	< 1.0
n-Butylbenzene	< 1.0
s-Butylbenzene	< 1.0
t-Butylbenzene	< 1.0
Dichlorodifluoromethane	< 2.0
Hexachlorobutadiene	< 1.0
4-Isopropyltoluene	< 1.0
Naphthalene	< 1.0
Isopropylbenzene	< 1.0
n-Propylbenzene	< 1.0
1,2,3-Trichlorobenzene	< 1.0
Trichlorofluoromethane	< 2.0
1,2,4-Trimethylbenzene	< 1.0
1,3,5-Trimethylbenzene	< 1.0

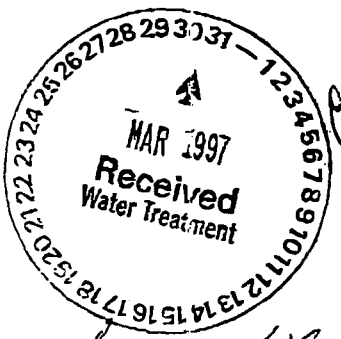
comments:

Monitored Cmpds. [40 CFR §141.40(e)]	Result
Bromobenzene	< 1.0
Bromomethane	< 2.0
Chloromethane	< 2.0
Chloroethane	< 2.0
2-Chlorotoluene	< 1.0
4-Chlorotoluene	< 1.0
Dibromomethane	< 1.0
1,3-Dichlorobenzene	< 1.0
1,1-Dichloroethane	< 1.0
1,3-Dichloropropane	< 1.0
2,2-Dichloropropane	< 1.0
1,1-Dichloropropene	< 1.0
cis-1,3-Dichloropropene	< 1.0
trans-1,3-Dichloropropene	< 1.0
1,1,1,2-Tetrachloroethane	< 1.0
1,1,2,2-Tetrachloroethane	< 1.0
1,2,3-Trichloropropane	< 1.0

Other Compounds	
Acetone	< 10
Acrylonitrile	< 10
2-Butanone (MEK)	< 10
Carbon disulfide	< 1.0
1,2-Dibromo-3-chloropropane	< 1.0
1,2-Dibromoethane	< 1.0
Ethyl methacrylate	< 1.0
2-Hexanone	< 1.0
Iodomethane	< 2.0
Methyl methacrylate	< 1.0
Methyl-t-butyl ether	< 2.0
4-Methyl-2-pentanone (MIBK)	< 2.0
Tetrahydrofuran	< 2.0
Vinyl acetate	< 10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	Result
None	



Form Rev. 1, 12/03/96

Approval: George A. Nesbitt

RECEIVED TIME NOV.30. 11:07AM

PRINT TIME NOV.30. 11:15AM

TEXAS DEPARTMENT OF HEALTH
VOLATILE ORGANICS COMPOUNDS by GC/MS

Submitter Number	DWS 0610004	Date Collected	5/21/97
TDH Sample Number	EP97-05554	Date Extracted	6/3/97
Method:	EPA 524.2 rev. 4.0 VOC's	Date Analyzed	6/3/97
Data File Number	03JUN006.D	Analyst:	csherman
Q.C. File	OV030603.S	Dilution Factor	1
Sample Type:	water	Concentration Units:	µg/l

Trihalomethanes [40CFR §141.30]	Result
Bromoform	< 0.5
Bromodichloromethane	**2.7**
Chloroform	**7.5**
Dibromochloromethane	**0.5**

Regulated Cmpds. [40 CFR §141.61(a)]	
Benzene	< 0.5
Carbon tetrachloride	< 0.5
Chlorobenzene	< 0.5
1,2-Dichlorobenzene	< 0.5
1,4-Dichlorobenzene	< 0.5
1,2-Dichloroethane	< 0.5
1,1-Dichloroethene	< 0.5
cis-1,2-Dichloroethene	< 0.5
trans-1,2-Dichloroethene	< 0.5
1,2-Dichloropropane	< 0.5
Ethyl benzene	< 0.5
Methylene chloride (DCM)	< 0.5
Styrene	< 0.5
Tetrachloroethene	< 0.5
Toluene	< 0.5
1,2,4-Trichlorobenzene	< 0.5
1,1,1-Trichloroethane	< 0.5
1,1,2-Trichloroethane	< 0.5
Trichloroethene	< 0.5
Vinyl chloride	< 0.5
m&p-Xylene	< 1.0
o-Xylene	< 0.5

Monitored Cmpds. [40 CFR §141.40(j)]	
Bromochloromethane	< 1.0
n-Butylbenzene	< 1.0
s-Butylbenzene	< 1.0
t-Butylbenzene	< 1.0
Dichlorodifluoromethane	< 2.0
Hexachlorobutadiene	< 1.0
4-Isopropyltoluene	< 1.0
Naphthalene	< 1.0
Isopropylbenzene	< 1.0
n-Propylbenzene	< 1.0
1,2,3-Trichlorobenzene	< 1.0
Trichlorofluoromethane	< 2.0
1,2,4-Trimethylbenzene	< 1.0
1,3,5-Trimethylbenzene	< 1.0

Monitored Cmpds. [40 CFR §141.40(e)]	Result
Bromobenzene	< 1.0
Bromomethane	< 2.0
Chloromethane	< 2.0
Chloroethane	< 2.0
2-Chlorotoluene	< 1.0
4-Chlorotoluene	< 1.0
Dibromomethane	< 1.0
1,3-Dichlorobenzene	< 1.0
1,1-Dichloroethane	< 1.0
1,3-Dichloropropane	< 1.0
2,2-Dichloropropane	< 1.0
1,1-Dichloropropene	< 1.0
cis-1,3-Dichloropropene	< 1.0
trans-1,3-Dichloropropene	< 1.0
1,1,1,2-Tetrachloroethane	< 1.0
1,1,2,2-Tetrachloroethane	< 1.0
1,2,3-Trichloropropane	< 1.0

Other Compounds	
Acetone	< 10
Acrylonitrile	< 10
2-Butanone (MEK)	< 10
Carbon disulfide	< 1.0
1,2-Dibromo-3-chloropropane	< 1.0
1,2-Dibromoethane	< 1.0
Ethyl methacrylate	< 1.0
2-Hexanone	< 1.0
Iodomethane	< 2.0
Methyl methacrylate	< 1.0
Methyl-t-butyl ether	< 2.0
4-Methyl-2-pentanone (MIBK)	< 2.0
Tetrahydrofuran	< 2.0
Vinyl acetate	< 10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	Result
Sulfur dioxide	**15 ***

comments:

* Possible carry over from previous sample.

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TEXAS DEPARTMENT OF HEALTH

VOLATILE ORGANIC COMPOUNDS by GC/MS

Submitter Number	DWS 0610004	Date Collected:	1/13/~~97~~ 98
TDH Sample Number	EP98-00210	Date Extracted:	1/15/98
Method:	EPA 524.2 rev. 4.0 VOC's	Date Analyzed:	1/15/98
Data File Number:	011513.D	Analyst:	M. Rahman
Q.C. File:	OV020115.S	Dilution Factor:	1
Sample Type:	water	Concentration Units:	µg/l

Trihalomethanes [40 CFR §141.30]	Result
Bromoform	<0.5
Bromodichloromethane	**4.1**
Chloroform	**4.7**
Dibromochloromethane	**1.5**

Regulated Cmpds. [40 CFR §141.61(a)]	
Benzene	<0.5
Carbon tetrachloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5
1,2-Dichloroethane	<0.5
1,1-Dichloroethene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethene	<0.5
Methylene chloride (DCM)	<0.5
1,2-Dichloropropane	<0.5
Ethyl benzene	<0.5
Styrene	<0.5
Tetrachloroethene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,1-Trichloroethane	<0.5
1,1,2-Trichloroethane	<0.5
Trichloroethene	<0.5
Vinyl Chloride	<0.5
m&p Xylene	<1.0
o-Xylene	<0.5

Monitored Cmpds. [40 CFR §141.40(j)]	
Bromochloromethane	<1.0
n-Butylbenzene	<1.0
s-Butylbenzene	<1.0
t-Butylbenzene	<1.0
Dichlorodifluoromethane	<2.0
Hexachlorobutadiene	<1.0
Isopropylbenzene	<1.0
4-Isopropyltoluene	<1.0
Naphthalene	<1.0
n-Propylbenzene	<1.0
1,2,3-Trichlorobenzene	<1.0
Trichlorofluoromethane	<2.0
1,2,4-Trimethylbenzene	<1.0
1,3,5-Trimethylbenzene	<1.0

Monitored Cmpds. [40 CFR §141.40(e)]	Result
Bromobenzene	<1.0
Bromomethane	<2.0
Chloromethane	<2.0
Chloroethane	<2.0
2-Chlorotoluene	<1.0
4-Chlorotoluene	<1.0
Dibromomethane	<1.0
1,3-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,3-Dichloropropane	<1.0
2,2-Dichloropropane	<1.0
1,1-Dichloropropene	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0
1,1,1,2-Tetrachloroethane	<1.0
1,1,2,2-Tetrachloroethane	<1.0
1,2,3-Trichloropropane	<1.0

Other Compounds	
Acetone	<10
Acrylonitrile	<10
2-Butanone (MEK)	<10
Carbon disulfide	<1.0
1,2-Dibromo-3-chloropropane	<1.0
1,2-Dibromoethane	<1.0
Ethyl methacrylate	<1.0
2-Hexanone	<1.0
Iodomethane	<2.0
Methyl methacrylate	<1.0
4-Methyl-2-pentanone (MIBK)	<2.0
Methyl-t-butyl ether	<2.0
Tetrahydrofuran	<2.0
Vinyl acetate	<10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	Result
None	

comments:

Amended Report

Collection date erroneously reported as 1997, date should read 1998

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Approval: [signature]

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TEXAS DEPARTMENT OF HEALTH
VOLATILE ORGANIC COMPOUNDS by GC/MS

Submitter Number	DWS 0610004	Date Collected:	02/08/99
TDH Sample Number	EP99-02197	Date Extracted:	02/16/99
Method:	EPA 524.2 rev. 4.0 VOC's	Date Analyzed:	02/16/99
Data File Number:	0216A10.D	Analyst:	C. Kabay
Q.C. File:	OV010216.S	Dilution Factor:	1
Sample Type:	water	Concentration Units:	µg/l

Trihalomethanes [40 CFR §141.30]	Result
Bromoform	<0.5
Bromodichloromethane	5.0
Chloroform	6.3
Dibromochloromethane	1.8

Regulated Cmpds. [40 CFR §141.61(a)]	
Benzene	<0.5
Carbon tetrachloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5
1,2-Dichloroethane	<0.5
1,1-Dichloroethene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethene	<0.5
1,2-Dichloropropane	<0.5
Methylene chloride (DCM)	<0.5
Ethylbenzene	<0.5
Styrene	<0.5
Tetrachloroethene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,1-Trichloroethane	<0.5
1,1,2-Trichloroethane	<0.5
Trichloroethene	<0.5
Vinyl chloride	<0.5
m&p-Xylene	<1.0
o-Xylene	<0.5

Monitored Cmpds. [40 CFR §141.40(j)]	
Bromochloromethane	<1.0
n-Butylbenzene	<1.0
s-Butylbenzene	<1.0
t-Butylbenzene	<1.0
Dichlorodifluoromethane	<2.0
Hexachlorobutadiene	<1.0
Isopropylbenzene	<1.0
4-Isopropyltoluene	<1.0
Naphthalene	<1.0
n-Propylbenzene	<1.0
1,2,3-Trichlorobenzene	<1.0
Trichlorofluoromethane	<2.0
1,2,4-Trimethylbenzene	<1.0
1,3,5-Trimethylbenzene	<1.0

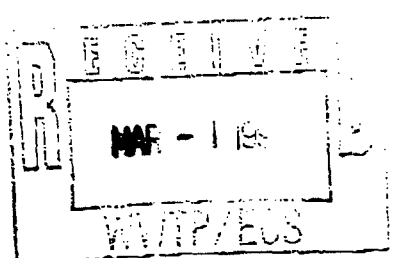
Monitored Cmpds. [40 CFR §141.40(e)]	Result
Bromobenzene	<1.0
Bromomethane	<2.0
Chloromethane	<2.0
Chloroethane	<2.0
2-Chlorotoluene	<1.0
4-Chlorotoluene	<1.0
Dibromomethane	<1.0
1,3-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,3-Dichloropropane	<1.0
2,2-Dichloropropane	<1.0
1,1-Dichloropropene	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0
1,1,1,2-Tetrachloroethane	<1.0
1,1,2,2- Tetrachloroethane	<1.0
1,2,3-Trichloropropane	<1.0

Other Compounds	
Acetone	<10
Acrylonitrile	<10
2-Butanone (MEK)	<10
Carbon disulfide	<1.0
1,2-Dibromo-3-chloropropane	<1.0
1,2-Dibromoethane	<1.0
Ethyl methacrylate	<1.0
2-Hexanone	<1.0
Iodomethane	<2.0
Methyl methacrylate	<1.0
4-Methyl-2-pentanone (MIBK)	<2.0
Methyl -t - butylether	<2.0
Tetrahydrofuran	<2.0
Vinyl acetate	<10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	Result
None	

comments:



Approval George A. Nesbitt

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TEXAS DEPARTMENT OF HEALTH
VOLATILE ORGANIC COMPOUNDS by GC/MS

Submitter Number	DWS 0610004	Date Collected:	04/12/99
TDH Sample Number	EP99-04811	Date Extracted:	04/16/99
Method:	EPA 524.2 rev. 4.0 VOC's	Date Analyzed:	04/16/99
Data File Number:	0416A10.D	Analyst:	M. Kabay
Q.C. File:	OV010416.S	Dilution Factor:	1
Sample Type:	water	Concentration Units:	µg/l

Trihalomethanes [40 CFR §141.30]	Result
Bromoform	<0.5
Bromodichloromethane	**3.2**
Chloroform	**4.9**
Dibromochloromethane	**1.1**

Regulated Cmpds. [40 CFR §141.61(a)]	
Benzene	<0.5
Carbon tetrachloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5
1,2-Dichloroethane	<0.5
1,1-Dichloroethene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethene	<0.5
1,2-Dichloropropane	<0.5
Methylene chloride (DCM)	<0.5
Ethylbenzene	<0.5
Styrene	<0.5
Tetrachloroethene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,1-Trichloroethane	<0.5
1,1,2-Trichloroethane	<0.5
Trichloroethene	<0.5
Vinyl chloride	<0.5
m&p-Xylene	<1.0
o-Xylene	<0.5

Monitored Cmpds. [40 CFR §141.40(l)]	
Bromochloromethane	<1.0
n-Butylbenzene	<1.0
s-Butylbenzene	<1.0
t-Butylbenzene	<1.0
Dichlorodifluoromethane	<2.0
Hexachlorobutadiene	<1.0
Isopropylbenzene	<1.0
4-Isopropyltoluene	<1.0
Naphthalene	<1.0
n-Propylbenzene	<1.0
1,2,3-Trichlorobenzene	<1.0
Trichlorofluoromethane	<2.0
1,2,4-Trimethylbenzene	<1.0
1,3,5-Trimethylbenzene	<1.0

Monitored Cmpds. [40 CFR §141.40(e)]	Result
Bromobenzene	<1.0
Bromomethane	<2.0
Chloromethane	<2.0
Chloroethane	<2.0
2-Chlorotoluene	<1.0
4-Chlorotoluene	<1.0
Dibromomethane	<1.0
1,3-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,3-Dichloropropane	<1.0
2,2-Dichloropropane	<1.0
1,1-Dichloropropene	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0
1,1,1,2-Tetrachloroethane	<1.0
1,1,2,2- Tetrachloroethane	<1.0
1,2,3-Trichloropropane	<1.0

Other Compounds	
Acetone	<10
Acrylonitrile	<10
2-Butanone (MEK)	<10
Carbon disulfide	<1.0
1,2-Dibromo-3-chloropropane	<1.0
1,2-Dibromoethane	<1.0
Ethyl methacrylate	<1.0
2-Hexanone	<1.0
Iodomethane	<2.0
Methyl methacrylate	<1.0
4-Methyl-2-pentanone (MIBK)	<2.0
Methyl -t- butylether	<2.0
Tetrahydrofuran	<2.0
Vinyl acetate	<10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	Result
None	

comments:

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Approved:

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TEXAS DEPARTMENT OF HEALTH
VOLATILE ORGANIC COMPOUNDS by GC/MS

Submitter Number	DWS 0610004	Date Collected:	07/12/99
TDH Sample Number	**EP99-08272**	Date Extracted:	07/15/99
Method:	EPA 524.2 rev. 4.0	Date Analyzed:	07/15/99
Data File Number:	0715A07.D	Analyst:	J. Obare
Q.C. File:	OV010715.S	Dilution Factor:	1
Sample Type:	water	Concentration Units:	µg/l

Regulated Cmpds. [40 CFR §141.61(a)]	Result
Benzene	<0.5
Carbon tetrachloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5
1,2-Dichloroethane	<0.5
1,1-Dichloroethene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethene	<0.5
1,2-Dichloropropane	<0.5
Methylene chloride (DCM)	<0.5
Ethylbenzene	<0.5
Styrene	<0.5
Tetrachloroethene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,1-Trichloroethane	<0.5
1,1,2-Trichloroethane	<0.5
Trichloroethene	<0.5
Vinyl chloride	<0.5
m&p-Xylene	<1.0
o-Xylene	<0.5

Monitored Cmpds. [40 CFR §141.40(e)]	
Chloroform	**4.0**
Bromodichloromethane	**2.6**
Dibromochloromethane	**1.0**
Bromoform	<0.5
Dibromomethane	<1.0
1,3-Dichlorobenzene	<1.0
1,1-Dichloropropene	<1.0
1,1-Dichloroethane	<1.0
1,1,2,2- Tetrachloroethane	<1.0
1,3-Dichloropropane	<1.0
Chloromethane	<2.0
Bromomethane	<2.0
1,2,3-Trichloropropane	<1.0
1,1,1,2-Tetrachloroethane	<1.0
Chloroethane	<2.0
2,2-Dichloropropane	<1.0
2-Chlorotoluene	<1.0
4-Chlorotoluene	<1.0
Bromobenzene	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0

* Screened Compounds	
1,2-Dibromo-3-chloropropane	<1.0
1,2-Dibromoethane	<1.0

Monitored Cmpds. [40 CFR §141.40(j)]	Result
1,2,4-Trimethylbenzene	<1.0
1,2,3-Trichlorobenzene	<1.0
n-Propylbenzene	<1.0
n-Butylbenzene	<1.0
Naphthalene	<1.0
Hexachlorobutadiene	<1.0
1,3,5-Trimethylbenzene	<1.0
4-Isopropyltoluene	<1.0
Isopropylbenzene	<1.0
t-Butylbenzene	<1.0
s-Butylbenzene	<1.0
Trichlorofluoromethane	<2.0
Dichlorodifluoromethane	<2.0
Bromochloromethane	<1.0

Other Compounds	
Acetone	<10
Acrylonitrile	<10
2-Butanone (MEK)	<10
Carbon disulfide	<1.0
Ethyl methacrylate	<1.0
2-Hexanone	<1.0
Iodomethane	<2.0
Methyl methacrylate	<1.0
4-Methyl-2-pentanone (MIBK)	<2.0
Methyl -t - butylether	<2.0
Tetrahydrofuran	<2.0
Vinyl acetate	<10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	Result

comments:

AUG - 5

*** EPA 524.2 is not the approved method for analysis of these compounds. Compounds are listed per TNRCC request.**

Rev. 1 (06/01/99)

Approval: George A. Nesbitt

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TEXAS DEPARTMENT OF HEALTH

VOLATILE ORGANIC COMPOUNDS by GC/MS

Submitter Number	DWS 0610004	Date Collected:	10/04/1999
TDH Sample Number	EP99-11239	Date Extracted:	10/08/1999
Method:	EPA 524.2 rev. 4.0	Date Analyzed:	10/08/1999
Data File Number:	07OCT-20.D	Analyst:	J. Obare
Q.C. File:	OV031007.S	Dilution Factor:	1
Sample Type:	Water	Concentration Units:	µg/l

Regulated Cmpds. [40 CFR §141.61(a)]	Result
Benzene	<0.5
Carbon tetrachloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5
1,2-Dichloroethane	<0.5
1,1-Dichloroethene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethene	<0.5
1,2-Dichloropropane	<0.5
Methylene chloride (DCM)	<0.5
Ethylbenzene	<0.5
Styrene	<0.5
Tetrachloroethene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,1-Trichloroethane	<0.5
1,1,2-Trichloroethane	<0.5
Trichloroethene	<0.5
Vinyl chloride	<0.5
m&p-Xylene	<1.0
o-Xylene	<0.5

Monitored Cmpds. [40 CFR §141.40(e)]	
Chloroform	**3.8**
Bromodichloromethane	**2.9**
Dibromochloromethane	**1.1**
Bromoform	<0.5
Dibromomethane	<1.0
1,3-Dichlorobenzene	<1.0
1,1-Dichloropropene	<1.0
1,1-Dichloroethane	<1.0
1,1,2,2- Tetrachloroethane	<1.0
1,3-Dichloropropane	<1.0
Chloromethane	<2.0
Bromomethane	<2.0
1,2,3-Trichloropropane	<1.0
1,1,1,2-Tetrachloroethane	<1.0
Chloroethane	<2.0
2,2-Dichloropropane	<1.0
2-Chlorotoluene	<1.0
4-Chlorotoluene	<1.0
Bromobenzene	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0

* Screened Compounds	
1,2-Dibromo-3-chloropropane	<1.0
1,2-Dibromoethane	<1.0

*** EPA 524.2 is not the approved method for analysis of these compounds. Compounds are listed per TNRCC request.**

Monitored Cmpds. [40 CFR §141.40(j)]	Result
1,2,4-Trimethylbenzene	<1.0
1,2,3-Trichlorobenzene	<1.0
n-Propylbenzene	<1.0
n-Butylbenzene	<1.0
Naphthalene	<1.0
Hexachlorobutadiene	<1.0
1,3,5-Trimethylbenzene	<1.0
4-Isopropyltoluene	<1.0
Isopropylbenzene	<1.0
t-Butylbenzene	<1.0
s-Butylbenzene	<1.0
Trichlorofluoromethane	<2.0
Dichlorodifluoromethane	<2.0
Bromochloromethane	<1.0

Other Compounds	
Acetone	<10
Acrylonitrile	<10
2-Butanone (MEK)	<10
Carbon disulfide	<1.0
Ethyl methacrylate	<1.0
2-Hexanone	<1.0
Iodomethane	<2.0
Methyl methacrylate	<1.0
4-Methyl-2-pentanone (MIBK)	<2.0
Methyl -t - butylether	<2.0
Tetrahydrofuran	<2.0
Vinyl acetate	<10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	Result
None	

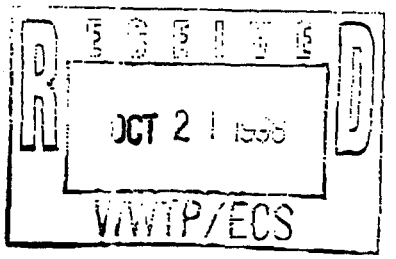
Comments:

Rev. 1 (06/01/99)

Approval: George A. Morbitt

Environmental Laboratories
Bethany Tech Center • Suite 190
400 W. Bethany Rd. • Allen, Texas 75013

October 19, 1998



REPORT OF: Raw Water Analysis

REPORT TO: Ms. Karen Emadiazar
City of Lewisville
PO Box 299002
Lewisville, Texas 75029-9002

REPORT NAME: WTP

SAMPLE DATE: October 15, 1998
SAMPLE TIME: 3:40PM
SAMPLE RECEIVED: October 16, 1998
TIME RECEIVED: 1:30PM
SAMPLE METHOD: Grab
SAMPLE COLLECTED BY: Janet A. Hurly – Customer

SAMPLE NUMBER: 109917

RESULTS:

Parameter	Detection Limits (mg/l)	Observed Concentration (mg/l)
Methyl Tert Butyl Ether	0.001	<0.001*

Quality Control Information

Parameter	Sample Preservation	EPA Method	C.V.%	Standard Deviation	Spike Recovery%	Date of Analyses	Time of Analyses	Analyst
MTBE	Cool to 4°C	8020	1.8	± 0.78	87	10/16/98	6:18PM	S. Wang
Surrogate: Bromofluorobenzene			N/A	N/A	86			

* < = Less than Detection Limit.

Respectfully submitted,

Kendall K. Brown

Kendall K. Brown
President

Prepared By Sherri Hughes
Reviewed By Shelly Connelly

Local: (972) 727-1123 **Long Distance: (800) 228-ERMI** **FAX: (972) 727-1175**

TEXAS DEPARTMENT OF HEALTH

VOLATILE ORGANICS COMPOUNDS by GC/MS

Submitter Number	DWS 0610004	Date Collected	06/14/2000
TDH Sample Number	EP00-08371	Date Extracted	06/20/2000
Method:	EPA 524.2 rev. 4.1	Date Analyzed	06/20/2000
Data File Number	20JUN-13.D	Analyst:	G.Hajipour
Q.C. File	OV030620.S	Dilution Factor	1
Sample Type:	water	Concentration Units:	µg/l

Regulated Cmpds. [40 CFR §141.61(a)]	Result
Benzene	< 0.5
Carbon tetrachloride	< 0.5
Chlorobenzene	< 0.5
1,2-Dichlorobenzene	< 0.5
1,4-Dichlorobenzene	< 0.5
1,2-Dichloroethane	< 0.5
1,1-Dichloroethene	< 0.5
cis-1,2-Dichloroethene	< 0.5
trans-1,2-Dichloroethene	< 0.5
1,2-Dichloropropane	< 0.5
Ethyl benzene	< 0.5
Methylene chloride (DCM)	< 0.5
Styrene	< 0.5
Tetrachloroethene	< 0.5
Toluene	< 0.5
1,2,4-Trichlorobenzene	< 0.5
1,1,1-Trichloroethane	< 0.5
1,1,2-Trichloroethane	< 0.5
Trichloroethene	< 0.5
Vinyl chloride	< 0.5
m&p-Xylene	< 1.0
o-Xylene	< 0.5

Monitored Cmpds. [40 CFR §141.40(e)]	
Chloroform	4.5
Bromodichloromethane	4.6
Dibromochloromethane	2.8
Bromoform	< 0.5
Dibromomethane	< 1.0
1,3-Dichlorobenzene	< 1.0
1,1-Dichloropropene	< 1.0
1,1-Dichloroethane	< 1.0
1,1,2,2-Tetrachloroethane	< 1.0
1,3-Dichloropropane	< 1.0
Chloromethane	< 2.0
Bromomethane	< 2.0
1,2,3-Trichloropropane	< 1.0
1,1,1,2-Tetrachloroethane	< 1.0
Chloroethane	< 2.0
2,2-Dichloropropane	< 1.0
2-Chlorotoluene	< 1.0
4-Chlorotoluene	< 1.0
Bromobenzene	< 1.0
cis-1,3-Dichloropropene	< 1.0
trans-1,3-Dichloropropene	< 1.0

* Screened Compounds	
1,2-Dibromo-3-chloropropane	< 1.0
1,2-Dibromoethane	< 1.0

*** EPA 524.2 is not the approved method for analysis of these compounds. Compounds are listed per TNRCC request.**

Monitored Cmpds. [40 CFR §.41.40(j)]	Result
1,2,4-Trimethylbenzene	< 1.0
1,2,3-Trichlorobenzene	< 1.0
n-Propylbenzene	< 1.0
n-Butylbenzene	< 1.0
Naphthalene	< 1.0
Hexachlorobutadiene	< 1.0
1,3,5-Trimethylbenzene	< 1.0
4-Isopropyltoluene	< 1.0
Isopropylbenzene	< 1.0
t-Butylbenzene	< 1.0
s-Butylbenzene	< 1.0
Trichlorofluoromethane	< 2.0
Dichlorodifluoromethane	< 2.0
Bromochloromethane	< 1.0

Other Compounds	
Acetone	< 10
Acrylonitrile	< 10
2-Butanone (MEK)	< 10
Carbon disulfide	< 1.0
Ethyl methacrylate	< 1.0
2-Hexanone	< 1.0
Iodomethane	< 2.0
Methyl methacrylate	< 1.0
4-Methyl-2-pentanone (MIBK)	< 2.0
Methyl-t-butyl ether (MTBE)	< 2.0
Tetrahydrofuran	< 2.0
Vinyl acetate	< 10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	Result
None	

Comments:

Rev. 3 (03/24/00)

Approval: George A. Nesbitt

TEXAS DEPARTMENT OF HEALTH
VOLATILE ORGANIC COMPOUNDS by GC/MS

Submitter Number	DWS 0610004	Date Collected:	08/02/2000
TDH Sample Number	EP00-10479	Date Extracted:	08/10/2000
Method:	EPA 524.2 rev. 4.1	Date Analyzed:	08/10/2000
Data File Number:	0810-18.D	Analyst:	G.Hajipour
Q.C. File:	OV020810.S	Dilution Factor:	1
Sample Type:	water	Concentration Units:	µg/l

Regulated Cmpds. [40 CFR §141.61(a)]	Result
Benzene	<0.5
Carbon tetrachloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5
1,2-Dichloroethane	<0.5
1,1-Dichloroethene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethene	<0.5
1,2-Dichloropropane	<0.5
Methylene chloride (DCM)	<0.5
Ethylbenzene	<0.5
Styrene	<0.5
Tetrachloroethene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,1-Trichloroethane	<0.5
1,1,2-Trichloroethane	<0.5
Trichloroethene	<0.5
Vinyl chloride	<0.5
m&p-Xylene	<1.0
o-Xylene	<0.5

Monitored Cmpds. [40 CFR §141.40(e)]	
Chloroform	3.7
Bromodichloromethane	3.0
Dibromochloromethane	1.3
Bromoform	<0.5
Dibromomethane	<1.0
1,3-Dichlorobenzene	<1.0
1,1-Dichloropropene	<1.0
1,1-Dichloroethane	<1.0
1,1,2,2- Tetrachloroethane	<1.0
1,3-Dichloropropane	<1.0
Chloromethane	2.2
Bromomethane	<2.0
1,2,3-Trichloropropane	<1.0
1,1,1,2-Tetrachloroethane	<1.0
Chloroethane	<2.0
2,2-Dichloropropane	<1.0
2-Chlorotoluene	<1.0
4-Chlorotoluene	<1.0
Bromobenzene	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0

* Screened Compounds	
1,2-Dibromo-3-chloropropane	<1.0
1,2-Dibromoethane	<1.0

* EPA 524.2 is not the approved method for analysis of these compounds. Compounds are listed per TNRCC request.

Monitored Cmpds. [40 CFR §141.40(j)]	Result
1,2,4-Trimethylbenzene	<1.0
1,2,3-Trichlorobenzene	<1.0
n-Propylbenzene	<1.0
n-Butylbenzene	<1.0
Naphthalene	<1.0
Hexachlorobutadiene	<1.0
1,3,5-Trimethylbenzene	<1.0
4-Isopropyltoluene	<1.0
Isopropylbenzene	<1.0
t-Butylbenzene	<1.0
s-Butylbenzene	<1.0
Trichlorofluoromethane	<2.0
Dichlorodifluoromethane	<2.0
Bromochloromethane	<1.0

Other Compounds	
Acetone	<10
Acrylonitrile	<10
2-Butanone (MEK)	<10
Carbon disulfide	<1.0
Ethyl methacrylate	<1.0
2-Hexanone	<1.0
Iodomethane	<2.0
Methyl methacrylate	<1.0
4-Methyl-2-pentanone (MIBK)	<2.0
Methyl-t-butyl ether (MTBE)	<2.0
Tetrahydrofuran	<2.0
Vinyl acetate	<10

Tentative identification of the largest non-priority pollutant peaks is provided by comparison with the EPA/NIH mass spectral library. Approximate quantitation is performed using internal standards and an assumed response factor of one.

Tentative Compound ID	Result
none	

comments:

Approval

Rev. 5 (03/24/00)

RECEIVED TIME NOV.30. 11:07AM

PRINT TIME NOV.30. AUG 16 2000 11:16AM

EXHIBIT D

CITY OF THE COLONY PROPOSED MARINA ALTERNATIVE SITES IN HIDDEN COVE PARK

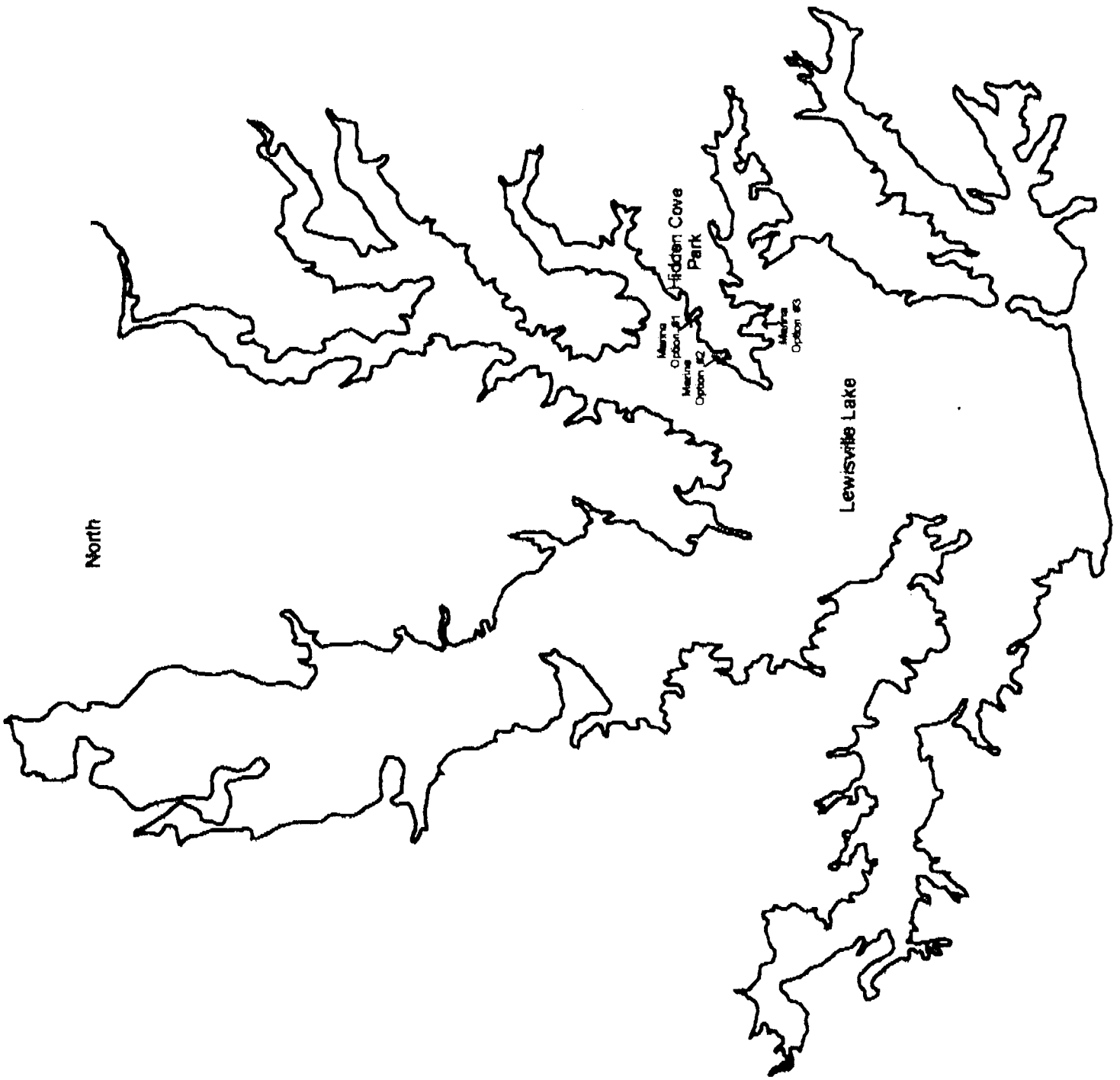

Hidden Cove Park
Marina Option #1
Marina Option #2
Marina Option #3
Lewisville Lake
North

EXHIBIT E

PROPOSED COTTONWOOD PARK MARINA PHASE PLANS

COTTONWOOD COVE MARINA

The intent of this document is to show the proposed marina layout and how the size of the marina relates to the overall water space available, and to Fiddler's Green housing development. The drawings contained herein show the marina as it will be developed in phases one, two, and three.

Decisions made regarding the design and layout of Cottonwood Cove Marina were based on the Lake Lewisville Use Study Development Plan Guidelines. Consideration was also given the history of Lake Lewisville and water levels from May 1957, when the lake filled to conservation pool, to present day lake levels and fluctuations.

Guidelines suggest that elevation 503.0 (10-year drawdown) be used for marina design and that a minimum depth of 4' be maintained. The drawings contained in this document meet both these requirements.

As the Cottonwood Cove marina layout and design were being done, the history of Lake Lewisville water depths and fluctuations was taken into account. That investigation revealed the following facts:

- Since the lake reached conservation pool in 1957, the level has been below 503.0 for only 78 days during that 43-year period.

- The lake has been between 503.01 and 504.99 for 236 days and between 505.0 and 507.0 for 145 days.

- Lake Lewisville has not been below elevation 507.0 since October 23, 1984.

FIDDLER'S
GREEN

COTTONWOOD COVE MARINA
LAKE LEWISVILLE
BEN MILLER

515.0
507.0
503.0
499.0
497.0

503.0
507.0
499.0
497.0
515.0

1010'

641'

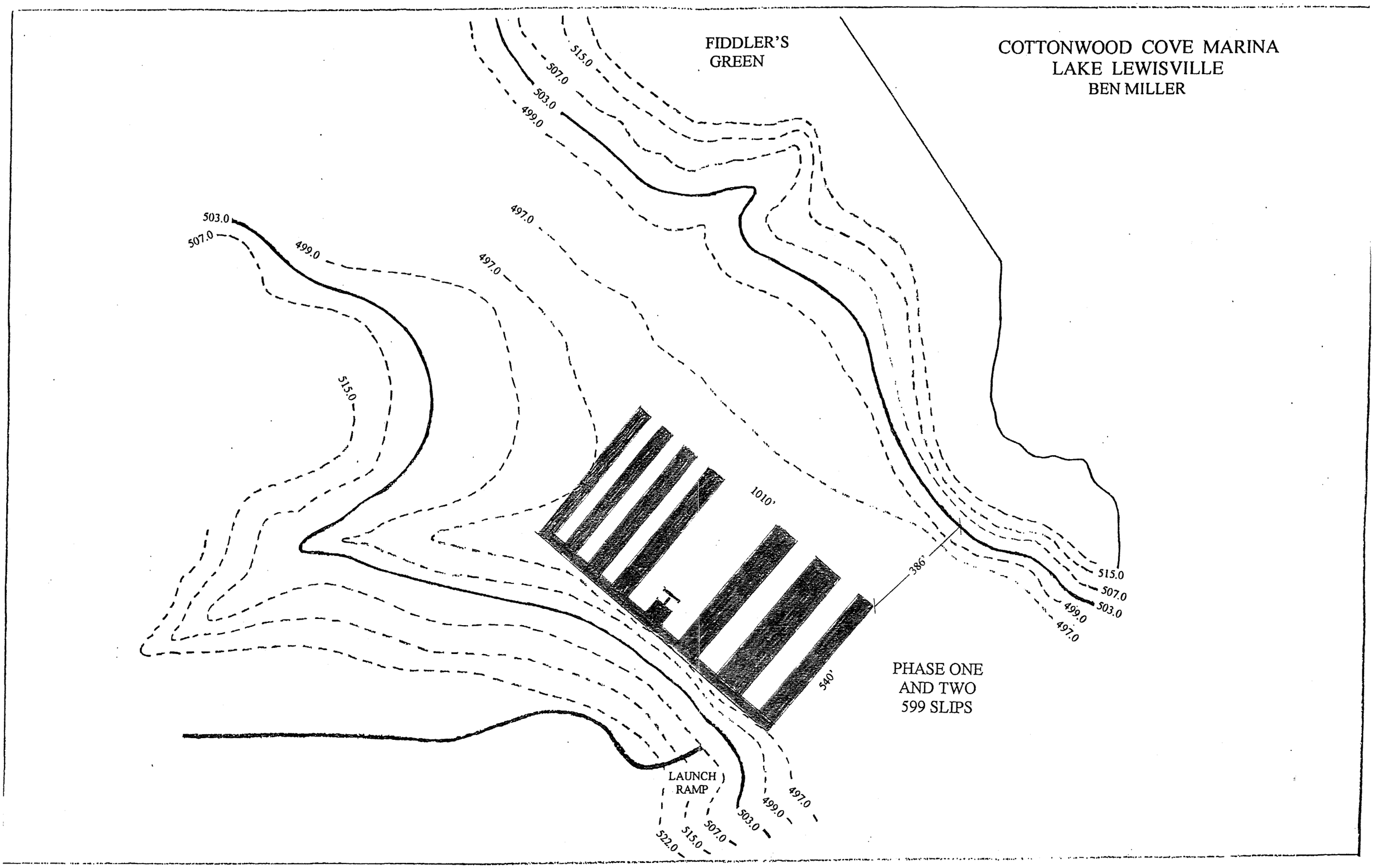
290'

515.0
507.0
503.0
499.0
497.0

PHASE ONE
267 SLIPS

LAUNCH
RAMP

497.0
499.0
503.0
507.0
515.0
522.0


FIDDLER'S
GREEN
COTTONWOOD COVE MARINA
LAKE LEWISVILLE
BEN MILLER
515.0
507.0
503.0
499.0
497.0
1010'
386'
540'
PHASE ONE
AND TWO
599 SLIPS
LAUNCH
RAMP
522.0

FIDDLER'S
GREEN

COTTONWOOD COVE MARINA
LAKE LEWISVILLE
BEN MILLER

515.0
507.0
503.0
499.0
497.0

1241'

187'

790'

PHASES ONE, TWO,
AND THREE
821SLIPS

LAUNCH
RAMP

522.0

EXHIBIT F

TOWN OF LITTLE ELM LETTER

Town of Little Elm

P.O. Box 129
Little Elm, Texas 75068
(972) 294-1821

October 17, 2000

Mr. Doug Cox

On or about September 13, 1999, I attended a Little Elm School Board Meeting to support the proposed development of a marina in Cottonwood Park. Also in attendance were three members of the Little Elm Town Council. The Little Elm Town Council has always supported the marina development unanimously.

A group opposing the marina was attempting to persuade the School Board that a marina at the south end of Lobo Lane would negatively impact the schools located on Lobo Lane.

Their main contention was that the marina would increase automobile traffic to the extent it would create safety problems.

Little Elm Police Chief Tommy Morale was asked by the School Board for his opinion on this matter. His response was "No, the traffic generated by marina customers and guest would not be excessive, especially during school hours, or after hours school activities."

The Board then asked for my opinion and I agreed with Chief Morale. I also stated that if in the unlikely event The Board felt the traffic did eventually become excessive, the Town Council would consider funding an alternate access route into Cottonwood Park, relieving Lobo Lane traffic.

The Town Council and I have repeatedly passed resolutions supporting the development of the marina. We are elected representatives for the citizens of Little Elm. Please make every effort necessary to approve the proposal for a marina development in Cottonwood Park.

Sincerely,

Jim Pelley, Mayor

FINDING OF NO SIGNIFICANT IMPACT
WATER-RELATED RECREATION DEVELOPMENT
LEWISVILLE LAKE, LEWISVILLE, TEXAS

This EA is tiered to the Lewisville Lake Programmatic Environmental Assessment (PEA). The findings of the PEA concluded that the requests affecting the number of vessels on the lake would exceed the carrying capacity established by the Corps in the Lewisville Lake Future Water-Related Development Policy. The FONSI for the PEA, which was executed on September 30, 1999, approved the carrying capacity, which authorized the increase of 274 vessels on Lewisville Lake, distributed by a 0 vessel increase in Zone A, a 46 vessel increase in Zone B, and a 228 vessel increase in Zone C, but specified that future water-related recreation development would be subject to tiered NEPA documentation. As outlined in the PEA, various entities that requested authorization of development projects affecting the carrying capacity of the lake held a meeting on 20 January 2000 where they arrived at a consensus on how to equitably distribute the available vessel carrying capacity in each zone. As a result of the meeting, these entities revised, and resubmitted their requests for further environmental consideration.

The tiered EA was circulated to interested individuals, groups, organizations, cities, state, and federal agencies for review and comment. A Public Notice describing the availability of the document was published on July 26, 2000 and the entire document was made available at the Lewisville Lake Project office, several local libraries, and city halls. The comment period closed on August 25, 2000. Comments were received from 57 agencies, municipalities, groups, and individuals. Comments were received expressing both oppostion to and support for the proposed development activities. Comments from agencies principally supported the establishment of a carrying capacity for Lewisville Lake and the findings of the EA. Two of the three municipalities responding expressed concern about the effect of increased boating activity and water quality. One municipality expressed support for one of the proposed projects. Citizen remarks were split. Fifteen homeowners in a subdivision adjacent to one of the proposed marina development sites expressed support for the project citing enhanced recreation amenities, increased economic development, and relief for the lack of marina facilities in the northeast portion of the lake, while 34 homeowners in a subdivision across the cove from the same proposed marina development expressed opposition to the project citing concerns about such issues as the information used to derive the carrying capacity policy, loss of habitat, noise impacts, aesthetic impacts, economic impacts, impediments to navigation, impacts to designated fish and wildlife lands, and impacts to water quality, especially the levels of a gasoline additive, *Methyl Tertiary Butyl Ether* (MTBE).

Careful review of the comments determined that concerns about water-related recreation development at Lewisville Lake could generally be broken down into two categories - overall concerns about MTBE levels in the lake and how that might affect water supply (municipalities) and specific concerns about the proposed marina development in Cottonwood Park (individuals). Further examination of the MTBE issue determined that while municipalities and regulatory agencies are concerned about MTBE levels in water supply, there are no Federal or State of Texas regulations or standards. In addition, recent data collected at Lewisville Lake near water supply intakes indicate that MTBE levels varied between being non-detectable to a high of 1.2 ppb recorded in July 2000. It is not anticipated that increasing the number of vessels on the lake within the established carrying capacity limits will cause MTBE levels to increase significantly in the future. The Corps is committed to working with the municipalities to the extent practicable to meet water quality concerns while still fulfilling our other flood control, stewardship, and recreation missions. In response to individual comments concerning the proposed Cottonwood Park marina, the Corps has made some recommendations for modifications of the design plan to eliminate, alleviate, and/or minimize to the extent possible, potential adverse impacts. In addition, the Corps has removed from further consideration two of three alternative sites proposed by the City of The Colony in Hidden Cove Park for future marina development in order to eliminate any potential for cumulative effects caused by concentration of water-related recreation development in the same geographical area.

Based on the conclusions of this EA, agency coordination, the results of the public involvement process, and the carrying capacity policy authorized in the PEA, the activities are anticipated to result in no significant adverse impacts on the natural or man-made environment, either individually or cumulatively, as long as the projects adhere to applicable regulations, policies, standards, guidelines, and mitigation requirements. Based on this assumption, I recommend a Finding of No Significant Impact.

Date 20 Dec. '00

Gordon M. Wells
Colonel, Corps of Engineers
District Engineer