



# **Response Action Plan and Construction Contingency Plan**

**Lilydale Park Dump Site and  
Lilydale Marina Demolition Site**

**City of St. Paul**

**January 29, 2010**

**Project Number 000211-09114-0**



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# 1. Purpose and Scope

This Response Action Plan and Construction Contingency Plan (RAP/CCP) has been developed in general accordance with Minnesota Pollution Agency (MPCA) Voluntary Investigation and Cleanup Program (VIC) guidance to assist the City of Saint Paul (City) in conducting removal actions at the Lilydale Marina Demolition and Lilydale Park Dump sites, both of which are located within Lilydale Regional Park (Park). The Park is generally located in the Northeast  $\frac{1}{4}$  of Section 14, the Northwest  $\frac{1}{4}$  of Section 13 and the Southwest  $\frac{1}{4}$  of Section 12; all in Township 28 North and Range 23 West in Ramsey and Dakota Counties, Minnesota. A site location map is included as Figure 1.

The Park will be redeveloped to provide the amenities desired by the community with a focus on the restoration, protection and interpretation of the Park's unique natural resources. The original 1991 Lilydale/Harriet Island Regional Park Master Plan was amended in January 2010 to reflect more current recreational priorities. A copy of the Lilydale Regional Park Master Site Plan is included as Figure 2. Proposed park improvements include the realignment of a portion of Lilydale Road/West Water Street and the construction of a picnic shelter along the western shore of Pickerel Lake.

This RAP/CCP addresses the removal of accumulated demolition debris and other waste material necessary to initiate the implementation of the park redevelopment plan. The removal of waste material from the Lilydale Park Dump site is necessary to achieve the roadway realignment and allow the construction of a picnic shelter on structurally-suitable fill. The removal of demolition debris from the Lilydale Marina Demolition site is necessary to allow the establishment of a dog park at that location, and the floodway-fill volume credit necessary to allow the construction of the picnic shelter at an elevation above the regulatory flood protection elevation of the Mississippi River.

The land encompassing the park has been the subject of regulatory scrutiny since the early 1970s and the MPCA's files date back to 1972. A number of environmental investigations have been conducted within the park including some limited soil sampling and analysis, but very little physical investigation of the areas of subject to this RAP/CCP has been undertaken. Polynuclear Aromatic hydrocarbons (PAHs), antimony, chromium, lead and thallium have all been detected in the Park above their Tier 1 (site screening) levels; however in each case the contaminant concentrations detected were very low. A specific contaminant of concern (COC) has yet to be identified in the areas of the park that are subject to this RAP/CCP, but given the lack of control over the material accumulated at the sites there are reasonable concerns that contaminants, regulated materials and/or special wastes may be present. The City wishes to be proactive with respect to potential contamination and has requested that Bonestroo prepare this RAP/CCP for the MPCA's review and approval.

While there are additional environmental issues associated with the Park that will need to be addressed to achieve the objectives outlined in the Park Master Plan, the funds currently available to the City for environmental restoration are only sufficient to implement removal actions at the Lilydale Park Dump and Lilydale Marina Demolition sites. The City will contract directly to have the removal work performed, and Bonestroo will observe and direct work and safety procedures onsite.

## 2. Project Contacts

### **Project Owner**

City of Saint Paul  
Division of Parks and Recreation  
400 City Hall Annex  
25 West 4<sup>th</sup> Street  
Saint Paul, MN 55102  
Contact: Ms. Alice Messer  
Phone: 651.266.6412  
Email: [alice.messer@ci.stpaul.mn.us](mailto:alice.messer@ci.stpaul.mn.us)  
Fax: 651.292.7405

### **Contractor**

To be determined

### **Environmental Consultant**

Bonestroo, Inc.  
2335 West Highway 36  
Saint Paul, MN 55113  
Phone: 651.636.4600  
Fax: 651.636.1311  
Contacts: Mr. Stuart Gross  
Phone: 262.643.9159  
Mobile: 414.526.3974  
Email: [stu.gross@bonestroo.com](mailto:stu.gross@bonestroo.com)  
  
Mr. Clinton Jordahl  
Phone: 320.229.5529  
Mobile: 320.266.0351  
Email: [clint.jordahl@bonestroo.com](mailto:clint.jordahl@bonestroo.com)

### **Analytical Laboratory**

To be determined (Pace or Test America)

### **MPCA Voluntary Investigation and Cleanup Program**

520 Lafayette Road North  
Saint Paul, MN 55155  
Fax: 651.296.9707  
Contacts: Ms. Amy Hadiaris  
Phone: 651.757.2402  
Email: [amy.hadiaris@state.mn.us](mailto:amy.hadiaris@state.mn.us)  
  
Ms. Shanna Schmitt  
Phone: 651.757.2697  
Email: [shanna.schmitt@state.mn.us](mailto:shanna.schmitt@state.mn.us)

## 3. Site Description

### 3.1 GENERAL SITE DESCRIPTION

Lilydale Regional Park is an approximately 384 acre parcel lying largely within the floodplain of the Mississippi River, and includes the approximately 100-acre spring-fed Pickerel Lake. It extends from the Smith Avenue High Bridge approximately 2.5 miles upriver to the Lilydale Pool and Yacht Club property. It is approximately one half mile wide at its widest point and bounded on the northwest by the Mississippi River and on the southeast by an approximately 250-foot bedrock escarpment.

The northern portion of the park lies with the City of St. Paul and Ramsey County, while the southern portion of the park lies within Dakota County and the cities of Lilydale and Mendota Heights. The approximate site boundaries are depicted on Figure 1. The entire park is owned and maintained by the City of St. Paul.

### 3.2 PHYSICAL SETTING

#### 3.2.1 TOPOGRAPHY

Much of the park lies on what is essentially a sand bar in the Mississippi River and is more or less level at an elevation of approximately 700 feet above mean sea level. There are a few linear depressions running parallel to the river that lie several feet lower than the surrounding terrain, but the most significant topographic features in the floodplain area of the park are the fill areas which rise as much as 19 feet above the surrounding terrain.

#### 3.2.2 GEOLOGY

According to published geologic information, surficial deposits across much of the park are comprised of Holocene alluvium deposited by the Mississippi River at flood stage. These deposits are generally sand and gravel that may be inter-bedded with finer grained slack-water sediments and organic-rich layers (Howard C. Hobbs, *et al*, in Geologic Atlas of Dakota County, Minnesota, N.H. Balaban and H.C. Hobbs, eds., 1990). The depth to bedrock is between 50 and 100 feet (Bruce A. Bloomgren, *et al*, in Geologic Atlas of Dakota County, Minnesota, N.H. Balaban and H.C. Hobbs, eds., 1990).

Driller's logs for several wells completed in the area were obtained from the Minnesota Department of Health County Well Index and suggest a depth to bedrock in the range of 70 to 80 feet. Where previous investigations of the site fully penetrated fill material, the alluvial deposits encountered ranged from lean clay to fine sand.

The uppermost bedrock unit in the floodplain area is likely the St. Peter Sandstone, which crops out at the base of the cliff along the southeastern park boundary. The St. Peter ranges in thickness from about 128 to 160 feet; however the upper portion has been eroded in the floodplain area of the park. The lower portion of the St. Peter Sandstone contains multicolored beds of sandstone, siltstone and shale with inter-beds of very coarse sandstone. Beneath the St. Peter Formation lie dolostones of the Prairie Du Chien Group (John H. Mossler, in Geologic Atlas of Dakota County, Minnesota, N.H. Balaban and H.C. Hobbs, eds., 1990)

### **3.2.3 HYDROGEOLOGY**

There has been no groundwater investigation completed within the Park to date. In general, the depth to groundwater across the floodplain portion of the park can be expected to vary with the stage of the Mississippi River, which is managed as a navigation pool above Lock and Dam #2 but has a history of inundating the park. Based on a number of site visits and a one-foot topographic survey of the park, it appears likely that the normal summer operating pool elevation is approximately 690 in the area of the Park. This likely maintains a depth to groundwater of about 10 feet across the site. Groundwater flow in the surficial deposits is likely toward the river, or may perhaps be vectored somewhat along the flow path of the river itself.

The Prairie Du Chien Group and the underlying Jordan Sandstone together comprise the most heavily used bedrock aquifer in the region. The general groundwater movement in the aquifer in the area of the Park is toward the Mississippi River, suggesting the Prairie Du Chien-Jordan aquifer discharges to the river (Roman Kanivetsky and Jane M. Cleland, in *Geologic Atlas of Ramsey County, Minnesota*, G.N. Meyer and L. Swanson, eds., 1992). A review of Minnesota Department of Health (MDH) well logs for the area suggests that the potentiometric surface of the Prairie Du Chien-Jordan aquifer is above the surface of the site.

### **3.3 HISTORY AND PAST LAND USE**

An overall historical perspective of the general history of the area now comprising the Park can be found in a previous Bonestroo report entitled "*Lilydale Regional Park Natural Resource Management Plan*" and dated May 2009. In summary, the area was likely first settled in the early to mid 1800s and in time became the small town of Lilydale. The community included numerous homes and accessory buildings along with a number of industrial and commercial operations. These nonresidential uses included a brick yard, an automobile salvage yard and a marina. The lower Lilydale area was subject to repeated flooding, and by the late 1970s, the entire population of approximately 600 people had been relocated to the bluffs above what is now the park. A plan was developed in 1973 by the Ramsey County Open Space System to remove "Environmental Intrusions" from the park which included buildings, wells, cesspools, secondary electrical lines, etc. This plan was apparently implemented between about 1974 and 1980, and some of the removed material was consolidated in an onsite landfill.

The City of St. Paul acquired the park in 1984 through a land swap agreement with Ramsey County. Initially the City struggled with people using the park as a dumping ground, but it appears that the installation of guard rails along Lilydale Road/West Water Street curtailed most of the dumping problems by about 1990. A parking lot and boat ramp to the Mississippi River and several stretches of paved trail were added to the park in the 1990s, but there has been little additional improvement to the park for more than 20 years.

This RAP/CCP has been developed to address removal actions in two specific areas of the Park. The following is a summary of the available information pertaining to these two areas

#### **3.3.1 LILYDALE MARINA DEMOLITION SITE**

The Lilydale Marina Demolition site is located between the Mississippi River and Lilydale Road generally in the SW<sup>1</sup>/<sub>4</sub> of the NE<sup>1</sup>/<sub>4</sub> of Section 14 T28N, R23W. The location of this site is shown on Figure 1. The site covers a little more than 6 acres and includes two large waste piles each approximately 2 acres in area and rising 12 to 18 feet above the surrounding terrain. An Existing Conditions Map is included as Figure 3.

It appears that Lilydale Marina was in operation from late 1950s or early 1960s until sometime between 1980 and 1984. The former owner of Lilydale Marina brought demolition material on to the property between 1953 and 1974 to construct a boat storage area at an elevation above the flood threat. Waste material exposed at the surface consists of demolition debris comprised primarily of concrete, bituminous pavement and dimension stone. In places the waste material is retained by stacked concrete and stone and by wooden utility pole retaining walls. The tops of the piles are very uneven likely as a result of differential settlement. The site fronts approximately 700 feet along the river with demolition debris extending into the river, and both up and down stream along the shoreline. The small marina building formerly located between the debris piles and near the river has been removed, and there is an abandoned underground petroleum pipeline that runs southeast to northwest between the two debris piles.

Bonestroo is not aware of any previous environmental investigation of the Lilydale Marina site. The MPCA visited the site in June 1973 and noted that demolition debris was being brought onto the site at that time. The owner apparently maintained that he was just doing some landscaping, and during a follow up visit in 1974, the MPCA noted that the site was "inactive".

### **3.3.2 LILYDALE PARK DUMP SITE**

The Lilydale Park Dump site is located on the northwest side of Lilydale Road/West Water Street between roadway and the Mississippi River. It straddles the border between Dakota and Ramsey Counties, but appears to be located primarily in Dakota County. It is generally located in the NW<sup>1</sup>/<sub>4</sub> of the NW<sup>1</sup>/<sub>4</sub> of Section 13 T28N, R23W. The location of this dump is shown on Figure 1.

The site is an irregularly shaped area about 6<sup>1</sup>/<sub>4</sub> acres size rising about 10 to 16 feet above the surrounding terrain. The surface of the site is well vegetated with grasses and weeds but, in contrast to the surrounding landscape, it generally lacks trees. A small amount of concrete and wood can be seen protruding through the uneven surface of the landfill in several areas. An Existing Conditions Map is included as Figure 4.

The Lilydale Park Dump was accumulated within the footprint of Lilydale Auto Parts which appears to have begun as a small operation along Lilydale Road/West Water Street in the mid to late 1950s. The salvage yard was slowly expanded northwesterly away from the road, and along with a garage and office building, the facility occupied approximately 6-acres by the mid 1970s.

Fill was accumulated at the site sometime after 1974, and it appears to have been received final cover by 1980. Little information is available about the material deposited at the site; however, it appears that buildings and other "Environmental Intrusions" were collected from the park property and aggregated at this site in accordance with the plan developed by the Ramsey County Open Space System in 1973. It also appears that solid waste that had been dumped in a wooded area northeast of Lilydale Auto Parts site during the 1940s and 1950s was consolidated in the fill pile, probably sometime between 1979 and 1980.

The Lilydale Park Dump site was investigated in January 1988 by Braun Engineering Testing, Inc. (Braun). Further discussion pertaining to the investigation conducted by Braun is provided in the following section.

## 4. Previous Investigations

### 4.1 BRAUN ENGINEERING TESTING, INC.

In January 1988, the City of St. Paul Division of Parks and Recreation retained Braun Engineering Testing, Inc. (now Braun Intertec Corporation or "Braun") to conduct 12 soil borings at four known waste disposal areas lying within the Park.

Braun completed two 15-foot hollow-stem auger borings on the Lilydale Park Dump site. The approximate boring locations based on the hand-drawn map included in the Braun report are shown Figure 4. Both borings encountered 13½ feet of fill, which was underlain by topsoil and/or alluvial deposits. Their boring logs indicate that the fill material consisted primarily of bricks, concrete and wood in a matrix of clay and sand soil. Braun reportedly screened soil samples recovered from these borings with a photo ionization detector and detected no organic vapors emanating from any of the samples.

One sample was composited from each boring and submitted to Braun's laboratory for chemical analysis. Both samples were analyzed for the presence and concentration organochlorine pesticides, polychlorinated biphenyls (PCBs), and Resource Conservation and Recovery Act (RCRA) metals.

No PCBs were detected in either of the samples submitted to the laboratory for analysis. Trace concentrations of arsenic, barium, chromium, lead, mercury and selenium were detected in both samples, but among these, the only element of potential concern appears to lead, which was detected at a maximum concentration of 380 mg/kg. This concentration is slightly above the 300 mg/kg Tier 2 Recreational Soil Reference Value (SRV) for lead, but well below the Tier 1 Soil Leaching Value (SLV) of 580 mg/kg.

The organochlorine pesticide analyses detected 4,4-DDT in one of the samples at a concentration of 0.1 mg/kg, which is a concentration equal to the lower laboratory detection limit reported and well below the SRV for 4,4-DDT at 15 mg/kg.

Since Braun composited these samples, it is not known if the 380 mg/kg lead concentration or the 0.1 mg/kg 4,4-DDT concentration represent the highest concentrations present in the soils at these locations, or if there were areas of higher concentration that were diluted by compositing them with cleaner soil subsamples. Braun recommended further testing of select soil subsamples and an evaluation of risk.

### 4.2 BONESTROO, INC.

As noted at the beginning of this section, Bonestroo completed a Natural Resource Management Plan (NRMP) for the Park in 2009. The NRMP report included a historical overview of the park and a summary of known environmental issues. The scope of work for the NRMP included reviewing information provided by the City and the files of the MPCA pertaining to lower Lilydale; a site reconnaissance; and, a review of a series of historical air photos for the area. No physical sampling or analysis was completed as part of this study.

## 5. Cleanup Objectives

### 5.1 GENERAL

The general cleanup objectives for the areas of the Park addressed by this RAP/CCP are to remove piled solid waste to allow the construction of the design elements and recreational amenities requested by the public and reflected in the 2009 Lilydale Regional Park Master Plan Amendment. In an effort to control disposal costs, it is the City's desire to recycle as much of the waste as is practical to construct park improvements. As there is currently no funding to complete the construction projects that would incorporate the recycled material, stockpiles may remain in the Park for some time.

All work at the site is proposed to be conducted in accordance with the provisions of this RAP/CCP and a Site Safety and Health Plan (SSHP) to be developed and submitted to the MPCA a minimum of one month prior to the initiation of field activities. Materials will be screened as they are excavated for indications of contamination. Excavated materials will be segregated for any further analysis that may be required to allow them to be reused onsite, or as may be required for offsite disposal at an appropriate facility specific to the characteristics of the material. It is anticipated that only crushed concrete and stone, and geotechnically suitable soils that are not contaminated above the Recreational SRVs or the Tier 1 SLVs will be reused in the project. If other materials are to be reused, appropriate reuse scenarios will be developed on a case by case basis in consultation with the City and MPCA. It is understood that reuse of materials contaminated above the Recreational SRV or Tier 1 SLV may require the implementation of institutional controls.

### 5.2 CHEMICALS OF CONCERN AND CLEANUP GOALS

#### 5.2.1 LILYDALE MARINA DEMOLITION SITE

As indicated, there has been no sampling or analysis conducted at the Lilydale Marina Demolition site. Nevertheless, given the relatively uniform and apparently inert nature of the material that can be observed, there is little concern of significant contamination.

Piled demolition debris will be removed from this area to level the ground at an elevation of approximately 700 ft, after the area is finished with topsoil and seeded. Achieving the desired outcome may or may not result in complete removal of the debris. If the monitoring and testing conducted during the removal indicates significant contamination or a regulatory conflict in leaving a specific media on the site, appropriate cleanup goals will be developed in consultation with the City and MPCA.

#### 5.2.2 LILYDALE PARK DUMP SITE

To date, the only potential Contaminant of Concern (COC) identified to date at the Lilydale Park Dump Site is lead. The MPCA's Recreational SRV for lead is 300 mg/kg, and this standard will be used as a criterion for the unrestricted onsite reuse of soil, and for confirmation sampling of native soils once all debris has been removed.

Additional potential contaminants such as PAHs, arsenic, mercury, and asbestos containing waste material (ACWM) are occasionally associated with demolition debris dumps. These materials, if present, have the potential to cause a localized concern. Contingencies for the identification and

management of these potential contaminants have been developed, and if detected, appropriate cleanup goals and/or reuse scenarios will be discussed with the City and MPCA.

## 6. Response Actions

### 6.1 OVERVIEW

The Lilydale Marina Demolition site and a portion of the surrounding area will be developed as an off leash dog park. With the exception of re-vegetation and the installation of perimeter fencing, no additional redevelopment of this area is anticipated following debris removal.

Following debris removal at the Lilydale Park Dump site, Lilydale Road/West Water Street will be realigned away from Pickerel Lake and across the northwestern portion of the dump site. A picnic shelter will be constructed more or less in the center of the site following the placement of approximately 11 feet of engineered fill. The roadway will also be elevated approximately 7 feet as it approaches the picnic shelter. Based on the Master Site Plan (Figure 2), it appears that the fill footprint required to support both the picnic shelter and roadway will entirely cover the area now occupied by the Lilydale Park Dump. It is anticipated that all crushed material and most or all of the soil suitable for reuse will be used to elevate the re-aligned roadway and picnic shelter.

### 6.2 REMOVAL ACTIONS

It is anticipated that excavation work at the site will be conducted primarily with a tracked excavator, most likely equipped with a hydraulic thumb. Front end loaders and/or skid steers may also be employed as needed to stockpile and load materials. A portable crusher may also be brought to the park to process concrete. Both on- and off-road dump trucks maybe used to relocate materials onsite, and/or to transport materials to offsite disposal facilities. The name of the excavation contractor, transporter, and any subcontractors will be submitted to the MPCA prior to implementation of this RAP/CCP. Bonestroo will be responsible for compliance with the RAP/CCP and will dictate field decision making such as the need to stop work to evaluate risks.

It is currently believed to be economically advantages to the City to mobilize a portable crusher to the Park to crush material to be reused in the project. Onsite concrete crushing (if it is to occur) will likely take place near the end of the project and may not require Bonestroo's oversight.

The initial phase of the removal actions will be conducted at Lilydale Park Dump site. Clearing this area of debris first will provide a storage area for reusable soil and recycled concrete product close to its presumptive area of end use. It is the intent to limit removal actions to solid waste and any soil incidental to that objective. It is anticipated any unusable debris (wood, tires, appliances, scrap metal, concrete with rebar, etc.) that may be present at the site will be removed for recycling or disposal at an appropriate facility. Following removal actions at the Lilydale Park Dump site, there should be a stock pile of crushed (or crushable) materials, and one or more stockpiles of soil material that is suitable for reuse in the project. As there is currently no funding available to realign the roadway or construct the picnic shelter, excavation for utility work and/or any soil correction required to complete these projects was not considered in the completion of this RAP/CCP.

Once the Lilydale Park Dump site has been cleared of debris, activities will switch to the Lilydale Marina Demolition site. As these debris piles are sorted, excess reusable soil and crushed (or

crushable) materials will be relocated to a stockpile area and/or final use location at the Lilydale Park Dump site.

As there is a bald eagle's nest located along the shoreline of Pickerel Lake between the Lilydale Park Dump and Lilydale Marina Demolition sites, concrete crushing in the Park will not likely occur until after the nesting season (August). If the removal actions at the Lilydale Park Dump site can be completed before August, the Lilydale Marina Demolition piles may be sorted and crushable material stockpiled near the proposed picnic shelter location. If the Lilydale Park Dump removal extends beyond August, crushing may occur at the Lilydale Marina site with crushed material transported to the stockpiling area near the proposed picnic shelter. In either case, the completion for the dog park is seen as an achievable short term goal that will increase public use of and support for the park, and it is the City's desire to not stockpile materials in a manner that would preclude the completion of the dog park.

### **6.2.1 SITE PREPARATION**

It is the City's intent that the Park remain open to the public throughout the work subject to this RAP/CCP. The realignment of Lilydale Road/West Water Street is a future phase of the project and there is at this point no plan to restrict through traffic.

Prior to the initiation of excavation activities, work area perimeters will be secured to restrict or prohibit public access as required. Work zones, decontamination corridors, and staging areas will be established and posted as required in cooperation with the selected excavation contractor. All necessary permits and erosion control measures will be in place prior to disturbing the site.

Clearing of trees and other woody vegetation may occur in advance of the excavation work in accordance with the provisions of the agreement to be reached between the City and the excavation contractor. Any such clearing will be done in a manner such that soil disturbance is minimized (i.e. no grubbing). The City may mark some large cottonwood trees at the Lilydale Marina Demolition site for preservation as it is apparent that fill was placed around some trees in this area. Trees and brush maybe chipped and disposed of onsite at the direction of the City, or disposed of offsite at the discretion of the contractor.

### **6.2.2 MATERIAL SCREENING**

As materials are excavated they will be visually monitored by a Bonestroo environmental field technician (EFT) for indications of contamination, including the presence of suspect ACWM. In addition, soil materials will be screened with a photo-ionization detector (PID) using the MPCA's polyethylene bag-headspace methodology. The homogenized bags will also be screened with an X-Ray Fluorimeter (XRF) capable of detecting, at a minimum, all 8 RCRA metals. PID/XRF screening will occur at a frequency deemed necessary by the EFT based on the homogeneity of the material and the extent to which it has been previously characterized; however, under no circumstances will the screening occur at a frequency less than one grab sample per 20 yards of material excavated or one sample per half-hour of work performed. In-situ XRF and/or PID screening may also be performed if deemed necessary and appropriate by the EFT.

### **6.2.3 SORTING AND STORAGE**

The Bonestroo EFT will work with the selected contractor to indentify and establish convenient locations to stockpile materials. Materials will be sorted based on anticipated management strategy; origin; homogeneity; need for additional evaluation; and indications of contamination including type and severity of contamination. Additional information pertaining to the sorting and

management of potentially-contaminated or otherwise regulated media is presented in Section 8.3 of this RAP/CCP document.

#### **6.2.4 DISPOSAL AND REUSE OF MATERIALS**

In general, if laboratory analyses do not indicate the presence of contamination (i.e. asbestos <1% and all detects below Recreational SRV and SLV), and the media contains less than 10% waste with no fragments greater than 6 inches (based on visual estimation), the material will be reused on site as structural or non-structural fill. Soil media containing more than 10% waste and/or contaminant concentrations above either the Recreational SRV or SLV will be reused on a case by case basis in consultation with the City and MPCA.

If laboratory analyses indicate that a material exceeds either the Recreational SRV or the SLV due solely to elevated metals concentrations, the material may be stabilized prior to reuse onsite. If soil stabilization is proposed, a work plan detailing the proposed procedures and reuse will be provided to the MPCA prior to commencement of the work.

It is anticipated that all ACWM and any other soil or soil mixture not conforming to the standards described above will be transported offsite and disposed of at a facility permitted to accept the waste, most likely located in Dakota County. If this approach proves technically or financially unfeasible, the conditions of reuse will be determined on a case by case basis in consultation with the City and MPCA.

#### **6.2.5 CONFIRMATION SAMPLING**

Upon completion of waste removal in any area and prior to the placement of stockpiled fill materials that would be intended for use in later phases of the project, samples will be taken to document the condition of the native soil. Some over excavation into the native soil may be conducted if field observations suggest a gross contamination problem. If significant contamination of the soil beneath the waste is suspected or confirmed, appropriate cleanup goals and strategies will be developed in consultation with the City and the MPCA.

Confirmation samples will be collected at the spatial frequency specified by the MPCA for excavation floor sampling in *Risk Based Site Characterization and Sampling Guidance* (Internal Review Draft, August 1997). Analytical parameters will be appropriate for the overlying waste material removed, and will be discussed with the City and MPCA prior to analysis.

#### **6.2.6 AIR MONITORING**

Dust generated during the excavation, sorting and processing of materials may contain contaminants. Dust will be suppressed by wetting, as necessary, to achieve "no visible emissions"; therefore, no dust monitoring is deemed necessary.

If ACWM is encountered at the site, an Emissions Control Plan will be developed any personnel and/or environmental air monitoring required will be conducted in accordance with this plan.

Throughout the work, the ambient atmosphere in active excavation zones will be monitored periodically for ionizable organic vapors using a PID and for methane using combustible gas meter.

## 7. Additional Characterization

To reduce the uncertainty regarding the nature of the material buried at the Lilydale Park Dump site, a series of test pits are proposed to be excavated to better characterize the waste material. The excavation of test pits will also provide a better understanding of the material to be encountered during the proposed removal actions, and an opportunity to characterize material as may be needed to meet landfill disposal requirements.

### 7.1 TEST PIT LOCATIONS

It is proposed that a tracked excavator equipped with a hydraulic thumb be used to excavate at least three test pits. The proposed test pit locations are shown on Figure 4. The locations were chosen based on their accessibility to the excavating equipment, the comparative seclusion from the public, and the assumption that removal actions will generally proceed from southwest to northeast through the fill.

It is anticipated that the three test pits proposed can be excavated and backfilled within one working day. Additional test pits may be excavated if they can be completed within the proposed time frame and/or are deemed necessary and appropriate based on the materials encountered. If additional locations are to be tested, the screening results from the initial test pits and the location(s) and rationale for additional investigation will be discussed with the City and MPCA.

### 7.2 SCREENING AND MONITORING

As the test pits are excavated, the materials encountered will be visually evaluated for the obvious physical characteristics that will control disposal and/or reuse options. Generally, the procedures described in Section 8.3 of this RAP/CCP will be followed. Visual and incidental olfactory indications of contamination will be noted if encountered. The ambient atmosphere in the work area will be constantly monitored with a combustible gas meter, and both the ambient atmosphere and selected samples of the materials excavated will be screened with a PID. If combustible gas concentrations in the work area reach 10% of the lower explosive limit or background PID readings exceeding 5 units are sustained in the work zone for more than one minute; the area will be evacuated until the source can be identified and controlled, appropriate personal protective measures are in place, or the condition naturally abates.

### 7.3 SAMPLING AND ANALYSIS

Soil and/or material samples will be collected from the test pits as deemed appropriate based on field observations. Analytical parameters for uncontrolled waste disposal sites typically include the following:

- Volatile Organic Compounds (VOC) by EPA Method 8260
- Semi-VOCs (SVOC) by EPA Method 8270
- Priority pollutant metals by EPA Methods 6010/7470/7471
- PCB by EPA Method 8082
- Organochlorine Pesticides by EPA Method 8081

- Diesel Range Organic Compounds (DRO) by Modified WDNR Methodology, and
- Asbestos by Polarized Light Microscopy (PLM) using NIOSH Methodology

The specific number of samples to be analyzed and the types of analyses to be performed will be determined following the field work after consultation with the City, MPCA VIC Staff, and land fill operators as appropriate.

#### **7.4 QA/QC SAMPLE COLLECTION**

Laboratory performance specifications and analytical data will be reviewed to ensure the data meets the data quality objectives of the investigation. Up to 10% of the samples may be submitted as duplicates. Trip blanks and methanol blanks will be analyzed as required; however, a need of equipment blanks is not anticipated.

#### **7.5 SITE CONTROL AND RESTORATION**

The test pit locations will be secured as necessary to exclude unauthorized access. This may include caution tape and lath, poly fencing, and/or signage as required.

Top soil cover will be stripped from the test tip areas to the extent practical and reserved for site restoration. Temporary stock piles will be accumulated on poly sheeting and covered with poly sheeting if necessary to control vapors or dust. All exhumed materials will be returned to the excavation during the same working day. If containers or other potentially hazardous materials such as are discussed in Section 8.3 are encountered, the City and MPCA VIC Program Staff will be consulted to determine appropriate management. Topsoil will be replaced to cover the excavation and the area will be seeded with an appropriate temporary seed mix. Category 3 straw blanket will be laid to entirely cover the area disturbed and will be anchored on an approximately 4-foot grid pattern or as required to prevent movement.

#### **7.6 REPORTING AND COORDINATION**

If verbal results of the field activities are not communicated with the City and MPCA during the work, a verbal summary will be provided shortly afterwards, and a consensus will be reached on which samples to be analyzed and the appropriate parameter list.

A brief written report providing a summary of field observations and the results of the laboratory analyses of samples at the site will follow shortly after receipt of the final laboratory reports. Any modification of the RAP/CCP that may be required will be completed and submitted to MPCA for approval prior to commencement of the proposed removal actions.

## 8. Construction Contingency Plan

### 8.1 PROJECT ORGANIZATION

A Bonestroo EFT will be onsite during all excavation activities to document compliance with the approved RAP/CCP. The EFT will monitor and screen the materials encountered, provide a preliminary onsite hazard evaluation, and have the authority to make operational decisions, such as stopping work and further evaluate risk. The EFT will be an environmental professional with, at a minimum; the training specified in 40 CFR 1910.120 and an asbestos inspector's certificate issued by the Minnesota Department of Health (MDH).

The selected excavation contractor will employ appropriately trained personnel to perform onsite functions subject to extraordinary worker protection restrictions. This might include the training specified in 40 CFR 1910.120 and/or asbestos working training certified by the MDH for personnel operating backhoes and/or managing field operations.

Bid specifications will be developed to facilitate the development of a Site Safety and Health Plan (SSHP). The SSHP will be submitted to the MPCA a minimum of one month prior to the initiation of field activities and a copy maintained at the site at all times.

### 8.2 SITE CONTROL

It is the City's intent that the Park remain open to the public throughout the work subject to this RAP/CCP. The realignment of Lilydale Road/West Water Street is a future phase of the project and there is at this point no plan to restrict through traffic.

Prior to the initiation of excavation activities, work area perimeters will be secured to restrict or prohibit public access as required. Work zones, decontamination corridors, and staging areas will be established and posted as required in cooperation with the selected excavation contractor. All necessary permits and erosion control measures will be in place prior to disturbing the site. The security measures employed to control the site will be monitored throughout the project for their effectiveness and will be adjusted as required to remain protective of the workers onsite and the public visiting the Park. The size, location and geometry of the work zones and staging areas may be adjusted as required based on the nature and volume of the materials encountered.

### 8.3 WASTE EVALUATION

All of the planned excavation will be conducted in areas of historic landfilling. Certain excavated materials may require characterization to evaluate appropriate handling, reuse or disposal alternatives. Excavated materials will be monitored for the presence of:

- Potentially Hazardous Waste (containerized wastes, batteries, powders, resins, etc.)
- Buried objects including white goods, tires, treated wood and other special wastes
- Suspect Asbestos-containing materials (ACM)
- Visible ash or clinkers
- Detectable organic vapors and elevated metals
- Strong or unusual odors
- Unusual matrix soil discoloration

The Bonestroo EFT will direct responses to the conditions listed as outlined in Sections 8.3.1 through 8.3.7 of this RAP/CCP.

A supply of 55-gallon (UN 1A2) metal drums, over-pack drums, and 10 mil polyethylene sheeting for stock piling and covering materials will be maintained onsite by the selected excavation contractor. A supply of laboratory sampling containers will also be maintained on site for waste sampling.

### **8.3.1 DEMOLITION DEBRIS**

To the extent practical, demolition waste will be segregated from potentially reusable soil and stockpiled in the designated staging area. Alternately, demolition waste that has been adequately characterized for disposal may be loaded directly for transportation to an appropriate offsite disposal facility.

As demolition debris is excavated, it will be visually monitored for the presence of suspect ACM. Thermal systems insulation, roofing materials, ceiling and floor tile, cementitious siding and pipe, and any other suspect ACM observed by the onsite inspector will be sampled and analyzed using PLM at a frequency necessary to adequately characterize the material. If suspect friable ACM is identified in the waste, soil samples may also be collected and analyzed.

Demolition debris and/or soil containing asbestos would be regulated as Asbestos Containing Waste Material (ACWM). To date, no ACWM has been identified at the project site. The MDH requires a 5 *calendar* day advance notice prior to the removal of any ACWM. Absent confirmation of the presence of ACWM, the MDH will not accept an advance notice. The MPCA's notification period is 10 *working* days; however the MPCA may accept an advanced "courtesy notice" without ACWM confirmation. In either case, it appears that a waiting period of at least 5 calendar days will be required before work can continue in an area where ACWM has been identified. Suspect ACWM will either be left undisturbed or staged in the area suspected of being impacted until confirmatory analysis has been completed and the notification requirements met.

If ACWM is identified at the site, the MPCA and MDH will be notified. An Emissions Control Plan (ECP) will be developed pursuant to National Emissions Standards for Hazardous Air Pollutants (NESHAP) requirements and submitted to the MPCA for approval. The ECP will include emissions control procedures and airborne fiber monitoring requirements. It is anticipated that the excavation contractor selected for the project will be a licensed asbestos abatement contractor and shall obtain the appropriate removal and disposal permits. The contractor will be responsible for compliance with all MNOSHA requirements for their employees, including personal monitoring. Bonestroo may hire an independent asbestos consultant to prepare the ECP and conduct any ambient perimeter monitoring that may be required.

### **8.3.2 POTENTIALLY HAZARDOUS WASTE**

If potentially hazardous wastes such as batteries, tars, sludges, semi-solids, resins, powders, liquids, or drums and/or paint cans with contents are encountered, work in the area will be suspended pending further evaluation by the Bonestroo EFT. The situation will be assessed based on the EFT's knowledge and experience using the available onsite instrumentation and in consultation with Mr. Daniel Feldt, Sr. Certified Industrial Hygienist (CIH) at Bonestroo (262) 643-9176 (office) and (414) 305-1984 (mobile).

If deemed necessary, the material will be carefully segregated and placed on 10 mil polyethylene sheeting in the designated staging area, or packaged in drums or over-pack drums. The need for

more secure storage will be evaluated on a case by case basis. These materials will be analyzed and managed appropriately offsite, and will not be reused as fill or buried in the park.

If the EFT determines that a spill of a substance has occurred that has the potential to cause pollution to the waters of the state, the EFT will immediately notify the State Duty Officer at (651) 649-5451, along with the City and the MPCA VIC Unit contacts. The EFT should be prepared to provide:

- Contractor and Consultant contact information
- Location of the spill site
- Date and time of the incident
- Estimated quantity and disposition of recovered materials
- Quantity and type of material released

### **8.3.3 PROHIBITED WASTES**

All recyclable metal, tires, white goods, treated wood and any other prohibited waste that may be encountered will be segregated from other materials and accumulated in roll-off boxes within the designated staging area. These materials will be recycled or otherwise appropriately managed offsite and will not be reused as fill.

### **8.3.4 REFUSE**

It is likely that both decomposable organic waste (wood, paper, etc.) and resilient inorganic waste (glass, porcelain, plastic, metal, etc.) will be encountered during excavation activities at the site. This material will be evaluated to determine its suitability for reuse as fill within the project; however it is anticipated that refuse will not be reused at the site and will be disposed of offsite. Refuse determined unsuitable for reuse will be segregated and staged in the work area or in the designated area for any further characterization that may be required for offsite disposal.

### **8.3.5 ASH**

Ash and clinkers have been found throughout the Park and may be encountered during excavation activities. Soil mixed with ash and clinkers may be used as controlled fill onsite only with the prior approval of the MPCA. This type of material, if encountered, will be segregated and appropriately characterized to determine if it meets the unrestricted recreational reuse standard for the site. If the material fails to pass this standard, reuse scenarios typically requiring restrictive covenants may be discussed with the City and the MPCA.

### **8.3.6 SOIL EXPORT**

It is the City's desire to incorporate all excess soil and granular material that meets recreational reuse standards as structural and non-structural fill in later phases of the project. Field screening results indicating a PID response greater than 10 ppm, or a lead concentration greater than 300 ppm using the XRF will be used to segregate materials for further evaluation by laboratory analysis. If necessary to control disposal costs, material that exceeds the recreational use standard may be reused in the project on a case by case basis in consultation with the City and MPCA. It is understood that reuse of materials exceeding the unrestricted recreational use standards may invoke restrictive covenants.

If soil export is required, characterization and coordination with the MPCA and the County where the waste disposal facility is located will be necessary. Soil will be sampled in accordance with the stockpile sampling guidance provided in the MPCA's Risk Based Site Evaluation Manual (1998). Offsite disposal parameters will be dictated by the disposal facility's permit. In general, the analyses required to develop a waste profile may include: Volatile Organic Compounds (VOCs), RCRA metals, pesticides, PCBs, PAHs, and both VOCs and RCRA metals by the Toxic Characteristic Leach Procedure (TCLP).

### **8.3.7 STOCK PILE MANAGEMENT**

Suspect ACWM, potentially hazardous wastes, and all special wastes will be segregated and managed in accordance with the procedures described above. Other potentially contaminated media (based on visual and incidental olfactory indications, and including any soil exhibiting detectable organic vapor concentrations) will be segregated based on the location from which it was excavated, the suspected type of impact, and the anticipated final management of the material.

If stockpiled away from its source, the material will be placed on polyethylene sheeting or other impervious surface as necessary. Stockpiles will be covered with polyethylene sheeting at the end of each work day and the sheeting will be secured in place. Stockpiles may be bermed as necessary to prevent stormwater run-on and/or runoff.

Stockpile samples will be analyzed as necessary to evaluate the material's suitability for reuse in the project, and/or as required for offsite disposal. Analytical parameters will be based field observations and consultation with the City and MPCA. Typical stockpile parameters might include VOCs, SVOCs, PCBs and metals.

## **8.4 HAZARD ASSESSMENT**

Although the available historical evidence indicates that the likelihood of exposure to contaminant levels in excess of regulatory limits is very low, the following procedures will be implemented for hazard recognition and evaluation.

### **8.4.1 CHEMICAL VAPOR HAZARDS**

If chemical odors or visual evidence of a potential chemical hazard are noted, operations will be discontinued pending evaluation of the evidence based on Bonestroo's experience with chemical hazards, material safety data sheets, the NIOSH Pocket Guide to Chemical Hazards, and weather conditions.

### **8.4.2 PARTICULATE HAZARDS**

A hazard from nuisance or quartz-based particulates is not expected since a "no visible emission" control program will be implemented. With respect to fibers (i.e. asbestos), the emissions control program that will be developed and implemented upon the discovery of any ACWM will be relied upon to control the threat.

### **8.4.3 PHYSICAL HAZARDS**

Heat stress is recognized as a potential hazard and will be monitored utilizing heat stress indices of radiant heat, dry-bulb temperature, relative humidity and workloads.

Since heavy machinery will be utilized at the site, employees working with or in the immediate vicinity of this equipment may be required to wear hearing protection. This will be verified by Bonestroo once the excavation activities begin at the site.

## **8.5 ACTION LEVELS**

Action levels for airborne contaminants regulated by MNOSHA will be established at 10% of the respective PELs. Upon reaching a respective action level, the EFT will direct that operations be stopped for further evaluation and testing.

The Action Level for flammable/combustible vapors will be the NIOSH pre-set limit in the screening equipment of 10% of the lower explosive limit (LEL). Upon activating the alarm for flammables/combustibles, the EFT will direct that operations be stopped for further evaluation and testing.

The Action Level for particulates will be the observation of visible emissions for more than one (1) minute without being able to suppress the dusting with wetting procedures. Upon development of this condition, the EFT will direct that operations be stopped for further evaluation.

The Action Level for Asbestos Containing Materials (ACM) will be the visual detection of fill materials which appear to have the potential to be ACM. Upon anyone observing this condition, the EFT will direct that operations be stopped for further evaluation and possible testing.

The Action Level for Heat Stress will be established utilizing the respective table in the most recent edition of the "TLV Booklet" published by the American Conference of Governmental Industrial Hygienists (ACGIH). Upon reaching this level of heat stress, the EFT will direct that operations be stopped for further evaluation and possible implementation of remedial measures.

The Action Level for noise will be levels at or above 90 dBA for periods of greater than one (1) minute. Upon reaching this level, the EFT will order workers in the immediate area that hearing protection is mandatory for a time period to be determined by the EFT.

## **8.6 RECOGNITION OF HAZARDOUS MATERIALS**

The potential for the presence of hazardous materials at this site has been noted and is listed accordingly in this document. Bonestroo's EFT will utilize a combination of experience, visual observations and equipment to facilitate recognizing the potential presence of hazardous materials at the site.

## 9. Reporting

The results of the Additional Characterization investigation will be summarized in a report that will be prepared about one to two weeks after receipt of the final analytical results. Modifications to the RAP/CCP may be proposed at that time.

Following the completion of the proposed removal actions, Bonestroo will prepare a RAP/CCP Implementation Report. The Implementation Report will, at a minimum, include the following:

- A summary of all field activities and screening results
- Excavated quantities by material type and location
- Quantities retained for reuse by type and source
- Analytical data for materials to be reused and as required for waste characterization
- Description of and rational for any modifications to the RAP/CCP
- Post removal confirmation sampling locations and results
- Waste manifests and disposal documentation
- Recommendations for additional investigation, response actions, or institutional controls

## 10. Proposed Schedule

May 2010 - Additional Characterization

July 2010 - Site Control/Erosion Control

July to August 2010 - Lilydale Park Dump site removal actions

- Transportation to offsite disposal (ongoing)
- Collect/analyze confirmatory samples from stockpile areas (ongoing)
- Stockpile materials to be crushed soil to be reused (ongoing)

August 2010 - Collect/analyze remaining confirmatory samples at Lilydale Park Dump site

August to September 2010 - Removal actions at Lilydale Marina Demolition site

- Transport crushed (or crushable) material and reusable soil to stockpile area at Lilydale Park Dump site
- Collect/analyze confirmatory samples at Lilydale Marina Demolition site

September 2010 - Final grade Lilydale Marina Demolition/Dog Park site

September 2010 - Crush any remaining material at Lilydale Park Dump site

November 2010 - Submit RAP/CCP Implementation Report

## 11. References

Balaban, N.H., and H.C. Hobbs, editors. 1990. *Geologic Atlas of Dakota County, Minnesota, County Atlas Series, Atlas C-6*. Minnesota Geological Survey

Bonestroo, Inc. May 31, 2009. *Lilydale Regional Park Natural Resource Management Plan*

Braun Engineering Testing, Inc. March 7, 1988. *Preliminary Subsurface Environmental Assessment, Lilydale Regional Park Area South of the Proposed Levee*

Delta Environmental Consultants, Inc. June 29, 2004. *Environmental Assessment Phase I, Pickerel Lake Site – Lilydale Regional Park*

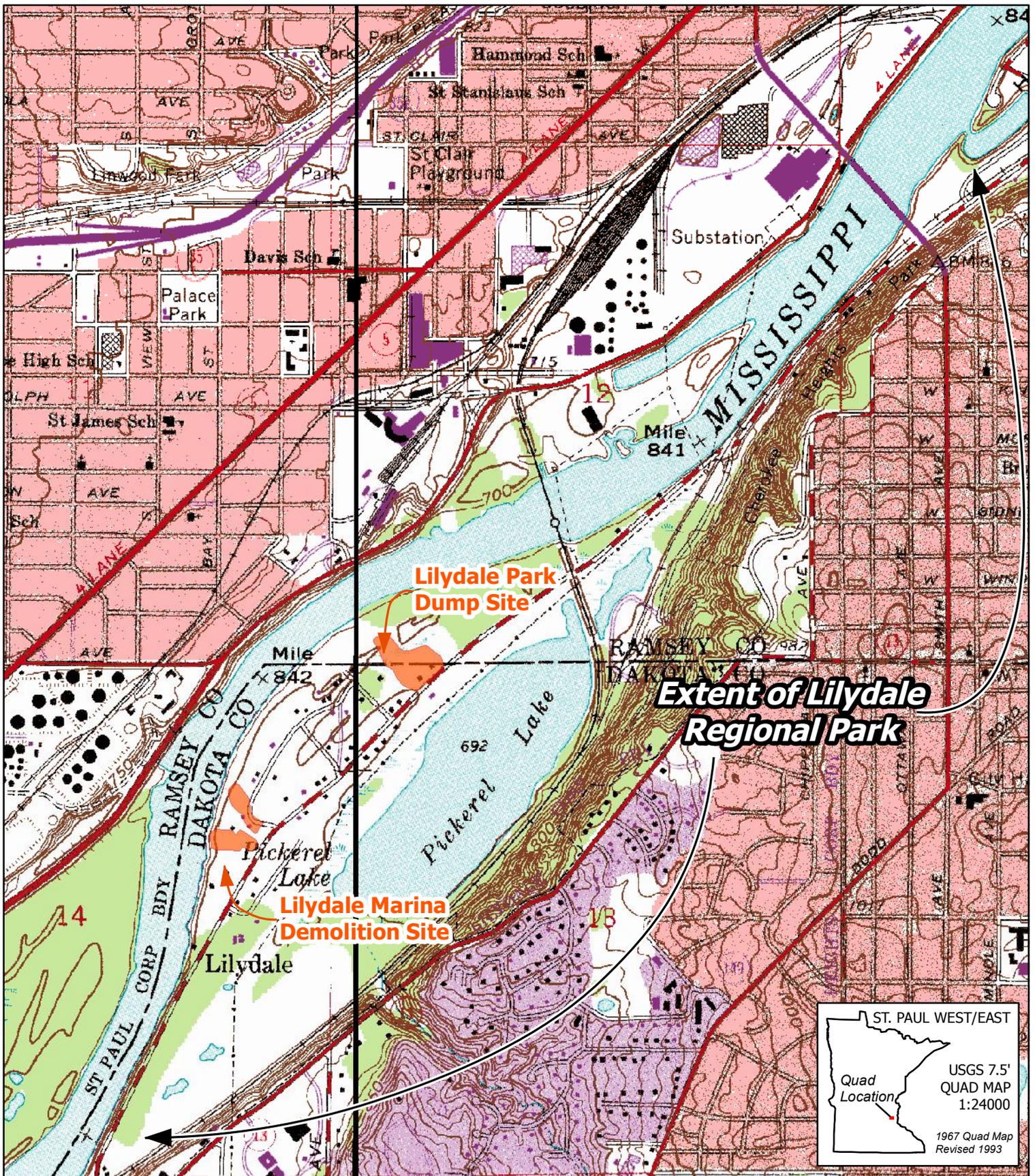
Delta Environmental Consultants, Inc. September 23, 2004. *Phase II Environmental Assessment, Pickerel Lake Site, Lilydale Road (CR-45)*

Meyer, G.N. and L. Swanson, editors. 1992. *Geologic Atlas of Ramsey County, Minnesota, County Atlas Series, Atlas C-7*. Minnesota Geologic Survey

Minnesota Pollution Control Agency 1972-2004. Public files for the *Lilydale Park Dump Site, Lilydale Marina Demolition Site, J.C. White Demolition Site, and Kamish Demolition Site*

St. Paul Parks and Recreation Design Section, September 2009. *Master Plan Amendment, Amendment to the Lilydale/Harriet Island Regional Park Master Plan*

# FIGURES



ST. PAUL WEST/EAST  
 Quad Location  
 USGS 7.5' QUAD MAP  
 1:24000  
 1967 Quad Map  
 Revised 1993

## Response Action Plan and Construction Contingency Plan



2335 West Highway 36  
 St. Paul, MN 55113  
 (651) 636-4600

City of St. Paul  
 Division of Parks and Recreation

Figure 1 - Site Location

Job No.  
 211-09114-0

Scale  
 1:16000

Date  
 1/19/2010

**PROPOSED GATEWAY**

**(SEE ENLARGED WATER STREET IMPROVEMENTS FOR DETAILS)**

- \* CREATE PARK ENTRANCE INTO LILYDALE REGIONAL PARK
- \* GATEWAY TO REFLECT OVERALL CHARACTER OF LILYDALE REGIONAL PARK
- \* USE OF NATURAL STONE AND HISTORIC BRICKS FROM TWIN CITY BRICK YARDS
- \* VEGETATED ROADWAY MEDIAN PROVIDED TO SLOW TRAFFIC AND MARK ENTRANCE INTO PARK

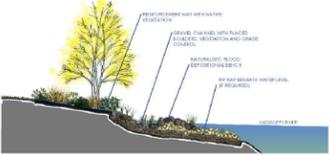
**PROPOSED WILDLIFE VIEWING AREAS**

- \* DEVELOP VIEWING AREAS ALONG PICKEREL LAKE AND THE MISSISSIPPI RIVER
- \* HIGHLIGHT DIVERSE BIRDING OPPORTUNITIES
- \* PROVIDE OPPORTUNITY TO SAFELY OBSERVE WILDLIFE IN NATURAL ENVIRONMENT
- \* REVEGETATE WITH PLANT MATERIAL THAT PROVIDE HABITAT AND FOOD SOURCE
- \* PROVIDE LOG/RECORD FOR PARK VISITORS TO RECORD AND DOCUMENT WILDLIFE OBSERVED



**MISSISSIPPI RIVERBANK RESTORATION**

- \* RESTORE MISSISSIPPI RIVERBANK TO NATURALIZED CONDITION
- \* REMOVE EXISTING BITUMINOUS AND CONCRETE ALONG SHORELINE
- \* RESTORE ENTIRE 2.5 MILES OF SHORELINE WITH EROSION PROTECTION AS NEEDED
- \* PROVIDE REGIONAL TRAIL REST AREA/PULL OFFS WITH RIVER VIEWS



**WATER STREET IMPROVEMENTS**

- \* BURY EXISTING OVERHEAD ELECTRIC LINES
- \* COLLECT BLUFF SEEPAGE IN CREEK
- \* REMOVE INVASIVE PLANT MATERIAL
- \* STRENGTHEN VISUAL CONNECTION TO THE MISSISSIPPI RIVER
- \* PROVIDE TRAIL OVERLOOKS/RESTING SPOTS

**FOSSIL GROUND ENTRANCE (SEE ENLARGED WATER STREET IMPROVEMENTS FOR DETAILS)**

- \* REALIGN ROAD TO ELIMINATE REGIONAL TRAIL AND ROADWAY CONFLICT
- \* DEVELOP TRAIL HEAD AT ENTRANCE TO FOSSIL GROUNDS
- \* PARKING LOT REDESIGNED TO ACCOMMODATE SCHOOL BUSES
- \* PROVIDE INTERPRETIVE SIGNAGE AND MAPS AT TRAIL HEAD
- \* SATELLITE REST ROOMS PROVIDED

**RELOCATED REGIONAL TRAIL UNDER RR**

- \* ELIMINATING EXISTING TRAIL AND ROADWAY CONFLICT
- \* REGIONAL TRAIL RELOCATED UNDER RAILROAD SWING BRIDGE
- \* REGIONAL TRAIL TO FOLLOW MISSISSIPPI RIVER

**PROPOSED BOARDWALK**

- \* PROVIDE CONNECTION TO FOSSIL GROUNDS
- \* FOLLOW RAILROAD EMBANKMENT
- \* MAINTAIN ACCESS TO ALL PARTS OF PICKEREL LAKE



**PROPOSED LAKESHORE PICNIC/ GATHERING AREA (SEE ENLARGED LAKESHORE PLAN FOR DETAILS)**

- \* REALIGN LILYDALE ROAD TO REMOVE PARKING AWAY FROM LAKESHORE
- \* PROVIDE PICNIC SHELTER WITH WATER AND SANITARY SERVICE
- \* SHELTER TO ACCOMMODATE SMALL GROUPS (APPROXIMATELY 50 PEOPLE)
- \* SHELTER TO REFLECT SUSTAINABLE BUILDING PRACTICES AND ARCHITECTURALLY FIT INTO NATURAL LANDSCAPE

**PICKEREL LAKESHORE TRAIL AND SHORELINE RESTORATION**

- \* TO BE CONSTRUCTED SUMMER 2009
- \* REVEGETATION OF SHORELINE WITH NATIVE PLANT MATERIALS
- \* RESTORATION OF CANOE LAUNCH
- \* CREATE FISHING ACCESS POINTS ALONG PICKEREL LAKESHORE
- \* PICNIC TABLES PROVIDED ALONG SHORELINE
- \* SPLIT RAIL FENCE PROTECTS NEWLY PLANTED SHORELINE
- \* SOFT TRAIL PROVIDED ALONG SECTION OF LAKESHORE



**EXISTING BOAT LAUNCH**

- \* RESTORE BOAT LAUNCH
- \* EXISTING PARKING LOT RE-CONFIGURED TO MORE APPROPRIATE SIZE
- \* REMOVE INVASIVE PLANT MATERIAL TO CREATE VIEWS OF BOAT LANDING FROM PARKING AND ROADWAY

**PROPOSED DOG PARK**

- \* LOCATED IN OLD LILYDALE MARINA DEMOLITION SITE
- \* DESIGNED TO UTILIZE EXISTING BOAT LAUNCH PARKING LOT (60 SPACES)
- \* DOG PARK TO BE ENTIRELY FENCED RESTRICTING ACCESS TO REST OF PARK AND MISSISSIPPI RIVER
- \* PROVIDE CONSTANT EYES ON PARK
- \* APPROXIMATELY 8 1/2 ACRES
- \* EXISTING TREE COVER PROTECTED WHERE POSSIBLE
- \* SOFT TRAILS PROVIDED FOR WALKING



**EXISTING KAMISH DEMOLITION SITE**

- \* REMOVE EXISTING DEMOLITION SITE
- \* RESTORATION TO WETLAND WILL PROVIDE CITY WITH WETLAND BANK CREDIT WHICH CAN BE SOLD \$1-2/SF
- \* REMOVE UNNATURAL LANDFORM WITHIN EXISTING WETLAND

**PROPOSED STORM WATER TREATMENT AREA**

- \* DIVERT STORM WATER FROM IVY FALLS
- \* STORM WATER TREATED IN SERIES OF WETLANDS PRIOR TO ENTERING PICKEREL LAKE
- \* WILL PROTECT EXISTING WATER QUALITY OF PICKEREL LAKE
- \* RISK OF WATER QUALITY DETERIORATING DUE TO LARGE STORM WATER DRAINAGE AREA ENTERING PICKEREL LAKE



**LEGEND**

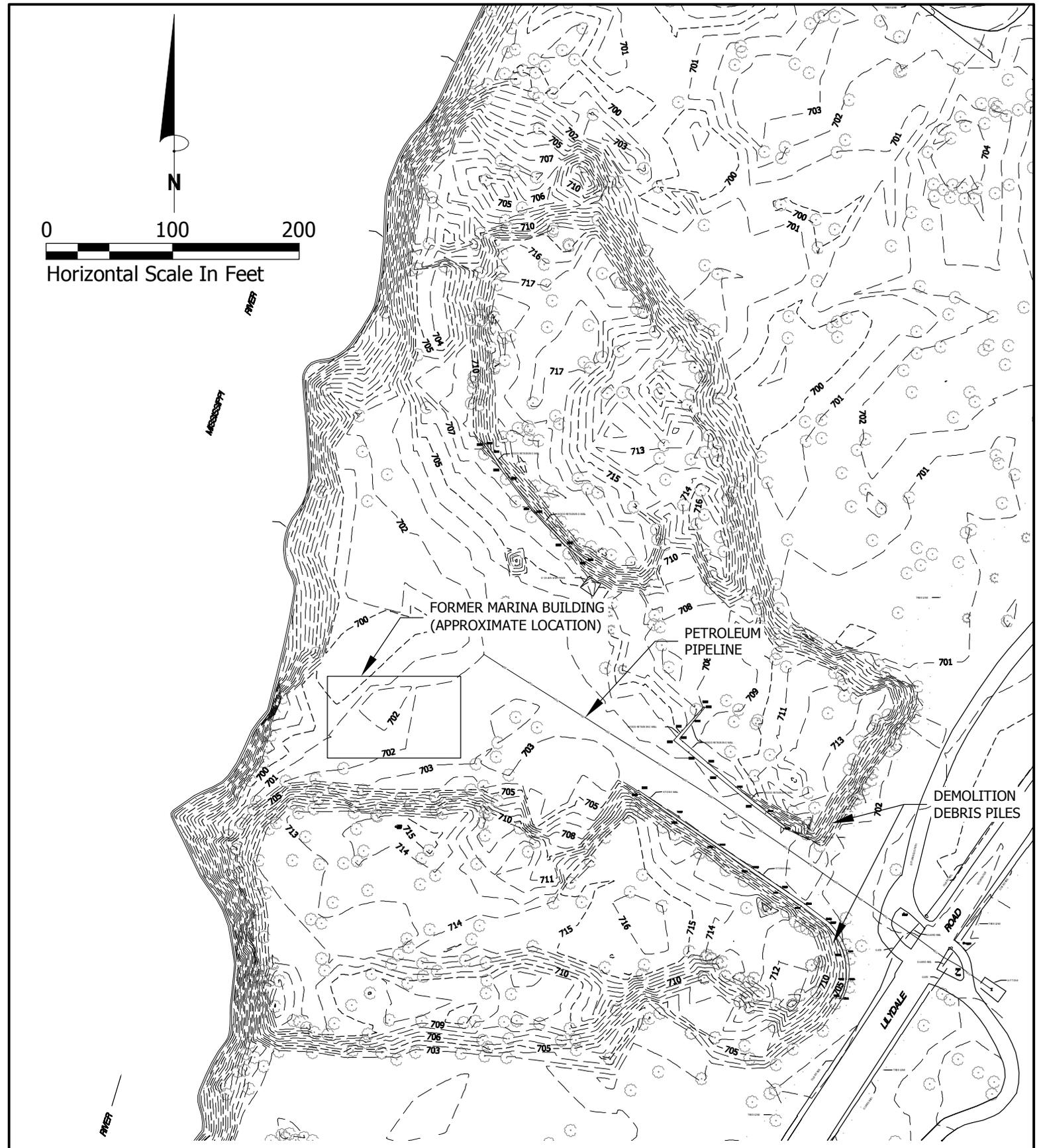
- EXISTING REGIONAL TRAIL
- PROPOSED REGIONAL TRAIL
- EXISTING SOFT TRAIL
- PROPOSED LAKESHORE TRAIL
- PROPOSED SOFT TRAIL
- EXISTING CONTOURS
- PROPOSED CONTOURS
- ☼ PROPOSED WILDLIFE VIEWING
- ☼ PROPOSED GROUP CAMPING



**LILYDALE REGIONAL PARK MASTER SITE PLAN**

LILYDALE REGIONAL PARK  
CITY OF SAINT PAUL PARKS AND RECREATION DESIGN SECTION  
JULY 1, 2009

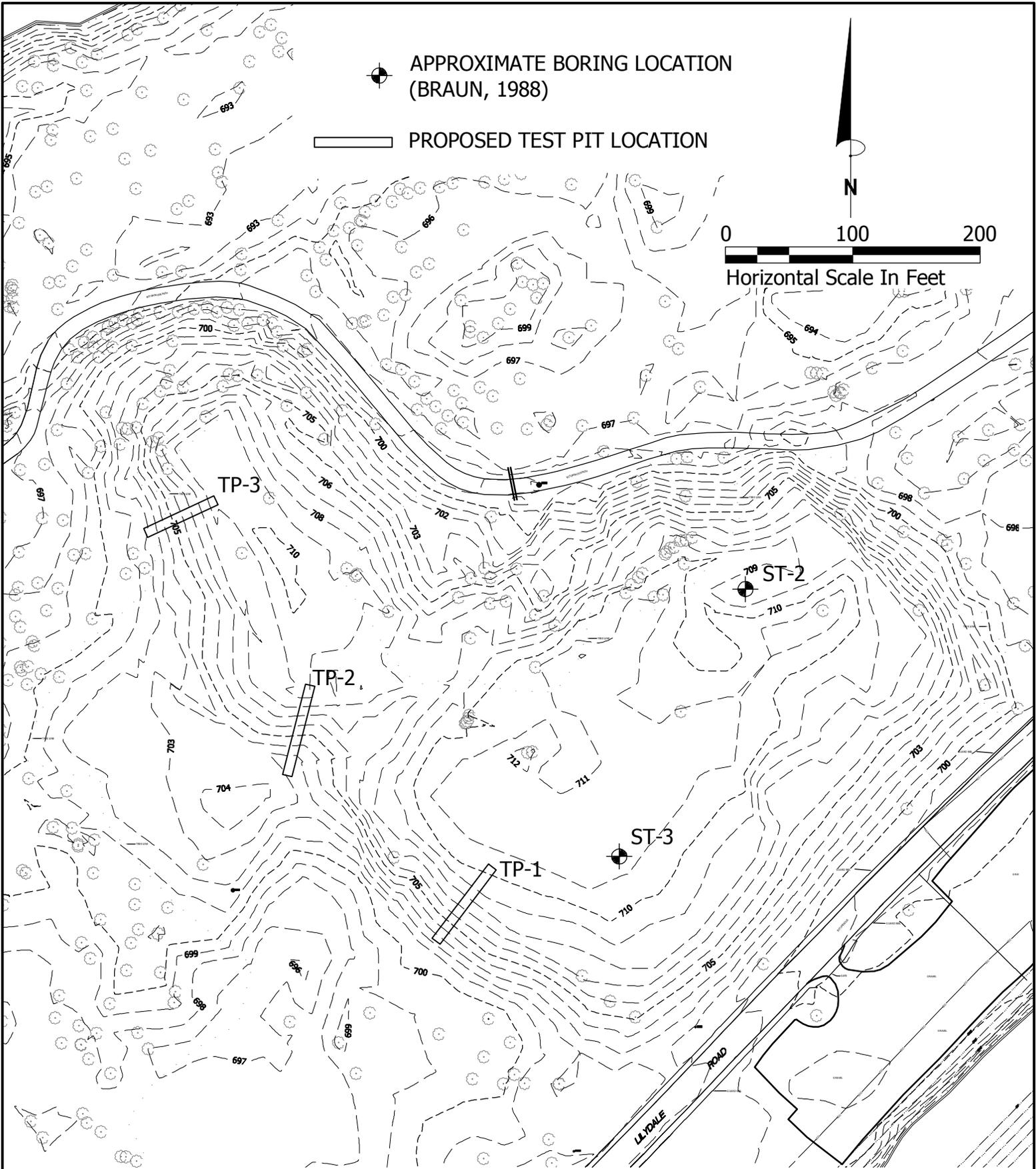
Figure 2



**EXISTING CONDITIONS - LILYDALE MARINA DEMOLITION SITE**

LILYDALE REGIONAL PARK - CITY OF ST. PAUL  
 RESPONSE ACTION AND CONSTRUCTION CONTINGENCY PLAN





**EXISTING CONDITIONS - LILYDALE PARK DUMP SITE**

LILYDALE REGIONAL PARK - CITY OF ST. PAUL

RESPONSE ACTION AND CONSTRUCTION CONTINGENCY PLAN

